EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	20237	porous near3 polymer	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2007/09/24 09:56
L2	286167	electrolyte	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2007/09/24 09:56
L3 .	1751	1 same 2	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2007/09/24 09:56
L4	761348	inorganic	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2007/09/24 09:57
L5	532	1 near5 4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2007/09/24 09:57
L6	41	5 same 2	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2007/09/24 10:10
L7	3	"7211352"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF '	2007/09/24 10:11
L8 -	13	"6645675"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	OFF	2007/09/24 10:12

9/24/2007 10:58:49 AM
C:\Documents and Settings\Lweiner\My Documents\EAST\Workspaces\Default EAST Workspace (Flat Panel LANDSCAPE).wsp

=> d que	145	
L2		SEA FILE=REGISTRY ABB=ON PLU=ON (105-58-8/BI OR 107-31-3/
22.2	10	BI OR 108-32-7/BI OR 109-94-4/BI OR 109-99-9/BI OR
		110-71-4/BI OR 12003-67-7/BI OR 1344-28-1/BI OR 13463-67-7/
		BI OR 14283-07-9/BI OR 14807-96-6/BI OR 21324-40-3/BI OR
		24937-79-9/BI OR 25014-41-9/BI OR 25322-68-3/BI OR
		25322-69-4/BI OR 28960-88-5/BI OR 33454-82-9/BI OR
		616-38-6/BI OR 623-53-0/BI OR 67-64-1/BI OR 67-68-5/BI OR
		68-12-2/BI OR 7631-86-9/BI OR 7791-03-9/BI OR 872-50-4/BI
		OR 9002-84-0/BI OR 9002-86-2/BI OR 9002-88-4/BI OR
		9003-07-0/BI OR 9003-20-7/BI OR 9003-21-8/BI OR 9003-32-1/B
		I OR 9003-42-3/BI OR 9003-49-0/BI OR 9003-63-8/BI OR
		9004-34-6/BI OR 90076-65-6/BI OR 9011-14-7/BI OR 9011-17-0/
- 0	_	BI OR 96-47-9/BI OR 96-48-0/BI OR 96-49-1/BI)
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L4		SEA FILE=REGISTRY ABB=ON PLU=ON 9002-88-4/RN
L5 L6		SEA FILE=REGISTRY ABB=ON PLU=ON 9003-07-0/RN
L7		SEA FILE=REGISTRY ABB=ON PLU=ON 9004-34-6/RN SEA FILE=REGISTRY ABB=ON PLU=ON 9011-17-0/RN
L8		SEA FILE=REGISTRY ABB=ON PLU=ON 9011-17-0/RN SEA FILE=REGISTRY ABB=ON PLU=ON 25014-41-9/RN
L9		SEA FILE=REGISTRY ABB=ON PLU=ON POLYIMIDE?/CN
L10		SEA FILE=REGISTRY ABB=ON PLU=ON POLYSULFONE?/CN
L11		SEA FILE=REGISTRY ABB=ON PLU=ON POLYURETHANE?/CN
L12		SEA FILE=REGISTRY ABB=ON PLU=ON NYLON/CN
L13		SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND 1-100/F
L14	4	SEA FILE=REGISTRY ABB=ON PLU=ON L13 AND PMS/CI
L16	1	SEA FILE=REGISTRY ABB=ON PLU=ON SILICA/CN
L17	1	SEA FILE=REGISTRY ABB=ON PLU=ON TALC/CN
L18		SEA FILE=REGISTRY ABB=ON PLU=ON ALUMINA/CN
L19		SEA FILE=REGISTRY ABB=ON PLU=ON "TITANIUM OXIDE"/CN
L20		SEA FILE=REGISTRY ABB=ON PLU=ON ZEOLITE?/CN
L21		SEA FILE=REGISTRY ABB=ON PLU=ON L2 AND AL O2 . LI/MF
L22	104	SEA FILE=REGISTRY ABB=ON PLU=ON (L16 OR L17 OR L18 OR L19 OR L20 OR L21)
L23	69	SEA FILE=REGISTRY ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6 OR
1123	0,5	L7 OR L8 OR L9 OR L10 OR L11 OR L12)
L24	72	SEA FILE=REGISTRY ABB=ON PLU=ON L23 OR L14
L25		QUE ABB=ON PLU=ON L24
L26	83462	SEA FILE=HCAPLUS ABB=ON PLU=ON "POLYMER MORPHOLOGY"+PFT, N
		T, OLD, NEW/CT
L27	9511	SEA FILE=HCAPLUS ABB=ON PLU=ON "BATTERY ELECTROLYTES"+PFT
		,NT,OLD,NEW/CT
L28		SEA FILE=HCAPLUS ABB=ON PLU=ON L22
L29		SEA FILE=HCAPLUS ABB=ON PLU=ON L25 AND L28
L30		SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND L26
L32 L33	187	SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND L27 QUE ABB=ON PLU=ON FILM# OR LAMIN? OR THINFILM? OR LAYE
ГЭЭ		R? OR OVERLAY? OR OVERLAID? OR LAMEL? OR MULTILAYER? OR S
		HEET?
L34	96	SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L33
L35		SEA FILE=HCAPLUS ABB=ON PLU=ON L34 AND ELECTROCHEM?/SC,SX
L36	26	SEA FILE=HCAPLUS ABB=ON PLU=ON L35 AND POROUS?
L37	52918	SEA FILE=HCAPLUS ABB=ON PLU=ON "POROUS MATERIALS"+PFT, NT,
		OLD, NEW/CT
L38		SEA FILE=HCAPLUS ABB=ON PLU=ON L35 AND L37
L39	5	SEA FILE=HCAPLUS ABB=ON PLU=ON L30 AND ELECTROCHEM?/SC,SX
T 40	140011	CEN ETTE-UCADITIC ADD-ON DITI-ON COMPOSTMES DEM NO OLD NEW!
L40	140211	SEA FILE=HCAPLUS ABB=ON PLU=ON COMPOSITES+PFT,NT,OLD,NEW/

		CT
L41	87	SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30
L42	17	SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40
L43	2	SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?
L44	2	SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR
		CATHOD? OR ANOD? OR ELECTROD?)
L45	45	SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42
		OR L43 OR L44

=> d 145 1-45 ibib ed abs hitstr hitind

L45 ANSWER 1 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2007:728889 HCAPLUS Full-text

DOCUMENT NUMBER: 147:147114

TITLE: Composite solid electrolyte for protection of

active metal anodes

INVENTOR(S): Visco, Steven J.; De Jonghe, Lutgard C.; Nimon,

Yevgeniy S.

PATENT ASSIGNEE(S): Polyplus Battery Company, USA

SOURCE: PCT Int. Appl., 77pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PA	PATENT NO.						KIND DATE				APPLICATION NO.						DATE			
WO	2007	0758	67		A2		2007	20070705		WO 2	006-		20061219							
	W:	ΑE,	AG,	AL,	AM,	AT,	ΑU,	AZ,	BA,	BB,	BG,	BR,	BW,	BY,	BZ,	CA,				
		CH,	CN,	CO,	CR,	CU,	CZ,	DE,	DK,	DM,	DZ,	EC,	EE,	EG,	ES,	FI,				
		GB,	GD,	GE,	GH,	GM,	GT,	HN,	HR,	HU,	ID,	IL,	IN,	IS,	JP,	ΚE,				
		KG,	ΚM,	KN,	ΚP,	KR,	ΚŻ,	LA,	LC,	LK,	LR,	LS,	LT,	LU,	LV,	LY,				
		MA,	MD,	MG,	MK,	MN,	MW,	MX,	MY,	MZ,	NA,	NG,	NI,	NO,	ΝZ,	OM,				
		PG,	PH,	PL,	PT,	RO,	RS,	RU,	SC,	SD,	SE,	SG,	SK,	SL,	SM,	sv,				
		SY,	ТJ,	TM,	TN,	TR,	TT,	TZ,	UA,	UG,	US,	UZ,	VC,	VN,	ZA,	ZM,	ZW			
	RW:	AT,	BE,	BG,	CH,	CY,	CZ,	DE,	DK,	EE,	ES,	FI,	FR,	GB,	GR,	HU,				
		ΙE,	IS,	ΙT,	LT,	LU,	LV,	MC,	NL,	PL,	PT,	RO,	SE,	SI,	SK,	TR,				
		BF,	ВJ,	CF,	CG,	CI,	CM,	GA,	GN,	GQ,	GW,	ML,	MR,	NE,	SN,	TD,				
		TG,	BW,	GH,	GM,	ΚE,	LS,	MW,	ΜZ,	NA,	SD,	SL,	SZ,	ΤZ,	UG,	ZM,				
		ZW,	AM,	AZ,	BY,	KG,	ΚZ,	MD,	RU,	ТJ,	TM									
US	2007	1727	39		A1		20070726 US 2006-612741					41	20061219							
PRIORIT	IORITY APPLN. INFO.:								US 2005-752255P]	P 20051219					

ED Entered STN: 06 Jul 2007

This composite solid electrolyte consists of a monolithic solid electrolyte base - a continuous matrix of an inorg. active metal ion conductor - and a filler component used to exclude through-porosity in the solid electrolyte. In this way a solid electrolyte produced by any process that yields residual through-porosity can be modified by the incorporation of a filler to form an impervious composite solid electrolyte by eliminating through-porosity in the base component. Methods of making the composites are described. The composites are useful in electrochem. cells such as batteries and protected active metal anodes, particularly Li anodes, that can be protected with a protective membrane incorporating the composite solid electrolyte. This protection prevents the active metal of the anode from reacting with the environment on the cathode side of the anode, which may include aqueous, air and organic liquid electrolytes and/or electrochem. active materials.

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses

(filler; in composite solid electrolytes for protection of active metal anodes in batteries) 1344-28-1 HCAPLUS RN CN Aluminum oxide (Al2O3) (CA INDEX NAME) *** STRUCTURE DIAGRAM IS NOT AVAILABLE *** RN 7631-86-9 HCAPLUS CN Silica (CA INDEX NAME) 9011-17-0 24937-79-9, PVdF 25014-41-9, PAN ΙT (gelling agent; in anolyte with protection of active metal anodes in batteries) 9011-17-0 HCAPLUS RN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene CN(CA INDEX NAME) CM 1 CRN 116-15-4 CMF C3 F6 CF2 F-C-CF3 2 CM CRN 75-38-7 CMF C2 H2 F2 CH₂ F-C-F RN 24937-79-9 HCAPLUS Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME) CM 1 CRN 75-38-7 CMF C2 H2 F2 CH2

```
RN
     25014-41-9 HCAPLUS
     2-Propenenitrile, homopolymer (CA INDEX NAME)
CN
     CM
          1
     CRN 107-13-1
     CMF C3 H3 N
 H 2 C === C H - C === N
     9002-84-0, Polytetrafluoroethylene 9002-88-4,
IT
     Polyethylene 9003-07-0, Polypropylene
        (in composite solid electrolytes for protection of active metal
        anodes in batteries)
RN
     9002-84-0 HCAPLUS
CN
     Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 116-14-3
     CMF C2 F4
     9002-88-4 HCAPLUS
RN
CN
     Ethene, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 74-85-1
     CMF C2 H4
 H2C==CH2
     9003-07-0 HCAPLUS
RN
     1-Propene, homopolymer (CA INDEX NAME)
CN
     CM
     CRN 115-07-1
     CMF C3 H6
```

(composite solid electrolytes for protection of active metal anodes

52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

H3C-CH-CH2

Battery anodes

Composites

Battery electrolytes

Polymer electrolytes Solid electrolytes

CC

ΙT

```
in batteries)
IT
     1306-38-3, Cerium oxide (CeO2), uses
                                           1314-23-4, Zirconium oxide
     (ZrO2), uses 1344-28-1, Alumina, uses 7631-86-9,
                    12004-39-6, Aluminum titanium oxide (Al2TiO5)
        (filler; in composite solid electrolytes for protection of active
        metal anodes in batteries)
     9011-17-0 24937-79-9, PVdF 25014-41-9, PAN
ΙT
        (gelling agent; in anolyte with protection of active metal anodes
        in batteries)
ΙT
     7440-23-5, Sodium, uses 9002-84-0, Polytetrafluoroethylene
     9002-88-4, Polyethylene 9003-07-0, Polypropylene
     9003-27-4, Polyisobutylene 25322-68-3D, PEO, cross-linked
     61179-11-1, Lanthanum lithium titanium oxide 89072-99-1, Nasiglas
     273943-45-6 882691-94-3, Chromium hafnium lithium phosphate
     882691-95-4, Hafnium indium lithium phosphate
                                                     882691-96-5, Hafnium
     iron lithium phosphate
                              882691-97-6, Hafnium lithium tantalum
                882691-98-7, Hafnium lithium scandium phosphate
     phosphate
     882691-99-8, Hafnium lithium lutetium phosphate
                                                       882692-00-4, Hafnium
     lithium yttrium phosphate
                                937242-60-9, Lanthanum lithium titanium
     oxide (La0.7Li0.3Ti03) 943436-14-4
                                           943436-15-5
                                                          943436-16-6
     943436-17-7
                  943436-18-8
                                 943436-19-9
                                               943436-20-2
                                                             943436-21-3
     943436-22-4 943436-23-5
                               943436-24-6
        (in composite solid electrolytes for protection of active metal
        anodes in batteries)
L45 ANSWER 2 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN
                         2007:499460 HCAPLUS Full-text
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         147:119187
TITLE:
                         Investigation of mechanical properties of
                         poly(vinyl chloride)-poly(ethylene oxide)
                         (PVC-PEO) based polymer electrolytes for lithium
                         polymer cells
AUTHOR(S):
                         Ramesh, S.; Winie, Tan; Arof, A. K.
CORPORATE SOURCE:
                         Faculty of Engineering and Science, Universiti
                         Tunku Abdul Rahman, Kuala Lumpur, 53300, Malay.
SOURCE:
                         European Polymer Journal (2007), 43(5), 1963-1968
                         CODEN: EUPJAG; ISSN: 0014-3057
                         Elsevier Ltd.
PUBLISHER:
DOCUMENT TYPE:
                         Journal
LANGUAGE:
                         English
ED
     Entered STN: 08 May 2007
     Polymer electrolytes composed of a blend of poly(vinyl chloride)-poly(ethylene
AΒ
     oxide) (PVC-PEO) as a host polymer, lithium triflate (LiCF3SO3) as a salt,
     mixture of ethylene carbonate (EC) and di-Bu phthalate (DBP) as plasticizers
     and silica (SiO2) as the nanocomposite filler were studied. Results suggest
     that PVC-PEO blending exhibits improved mech. strength compared to that of
     pure PEO. The introduction of LiCF3SO3 changes the mech. properties of PVC-
     PEO blends from hard and brittle to soft and tough. In PVC-PEO:LiCF3SO3
                                         5
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(70:30) system, the Young's modulus value decreases from 5.30 + 10-1 MPa to 4.78 + 10-4 MPa and the elongation at peak value increases from 3.71 mm to 32.09 mm with the incorporation of DBP and EC. The deteriorated mech. properties with the addition of plasticizers are overcome with the addition of SiO2 as nanocomposite filler. In PVC-PEO-LiCF3SO3-DBP-EC system, the addition of 5% SiO2 increases the Young's modulus value from 4.78 + 10-4 MPa to 1.51 + 10-3 MPa. The improvement of the mech. properties reveals greater dispersion of SiO2 particles in PVC-PEO blend based polymer electrolytes. In practical lithium polymer cells, inorg. fillers are frequently added to improve the mech. strength of the electrolyte films.

IT **7631-86-9**, Silica, uses

(mech. properties of PVC-poly(ethylene oxide) solid electrolytes for lithium polymer cells)

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

IT 9002-86-2, Poly(vinyl chloride)

(mech. properties of PVC-poly(ethylene oxide) solid electrolytes for lithium polymer cells)

RN 9002-86-2 HCAPLUS

CN Ethene, chloro-, homopolymer (CA INDEX NAME)

CM 1

CRN 75-01-4 CMF C2 H3 C1

 $H_2C \longrightarrow CH - C1$

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 52

IT Battery electrolytes

Elongation, mechanical

Nanocomposites

Plasticizers

Polymer electrolytes

Stress-strain relationship

Young's modulus

(mech. properties of PVC-poly(ethylene oxide) solid electrolytes for lithium polymer cells)

IT 7631-86-9, Silica, uses

(mech. properties of PVC-poly(ethylene oxide) solid electrolytes for lithium polymer cells)

IT 9002-86-2, Poly(vinyl chloride)

28

(mech. properties of PVC-poly(ethylene oxide) solid electrolytes for lithium polymer cells)

REFERENCE COUNT:

THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 3 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2006:1324399 HCAPLUS Full-text

DOCUMENT NUMBER: 146:207135

TITLE: Composite Particles of Polyethylene @ Silica AUTHOR(S): Sertchook, Hanan; Elimelech, Hila; Makarov,

Carina; Khalfin, Rafail; Cohen, Yachin; Shuster,

Michael; Babonneau, Florence; Avnir, David

CORPORATE SOURCE: Institute of Chemistry, The Hebrew University of

Jerusalem, Jerusalem, 91904, Israel

SOURCE: Journal of the American Chemical Society (2007),

129(1), 98-108

CODEN: JACSAT; ISSN: 0002-7863

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 19 Dec 2006

ΑB Polyethylene (PE) and silica are perhaps the simplest and most common organic and inorg. polymers, resp. We describe, for the first time, a phys. interpenetrating nanocomposite between these two elementary polymers. While polymer-silica composites are well known, the nanometric phys. blending of PE and silica has remained a challenge. A method for the preparation of such materials, which is based on the entrapment of dissolved PE in a polymerizing tetraethoxysilane (TEOS) system, was developed. Specifically, the preparation of submicron particles of low-d. PE@silica and high-d. PE@silica is detailed, which is based on carrying out a silica sol-gel polycondensation process within emulsion droplets of TEOS dissolved PE, at elevated temps. The key to the successful preparation of this new composite was the identification of a surfactant, PE-b-PEG, that is capable of stabilizing the emulsion and promoting the dissoln. of the PE. A mechanism for the formation of the particles and their inner structure are proposed, based on a large battery of analyses, including TEM (TEM) and scanning electron microscopies (SEM), surface area and porosity analyses, various thermal analyses including thermal gravimetric anal. (TGA/DTA) and differential scanning calorimetry (DSC) measurements, small-angle x-ray scattering (SAXS) measurements and solid-state NMR spectroscopy.

IT 9002-88-4, LDPE

(or HDPE; preparation of phys. interpenetrating nanocomposite from polyethylene and silica)

RN 9002-88-4 HCAPLUS

CN Ethene, homopolymer (CA INDEX NAME)

CM 1

CRN 74-85-1 CMF C2 H4

H2C-CH2

IT 7631-86-9P, Silica, preparation (preparation of phys. interpenetrating panocomposite

(preparation of phys. interpenetrating nanocomposite from polyethylene and silica)

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

0 = Si = 0

CC 37-6 (Plastics Manufacture and Processing) IT Crystallinity Particle size Polymer morphology Porosity Surface area (of phys. interpenetrating nanocomposite from polyethylene and silica) ΙT Nanocomposites Particles Penetrating agents Permeation Surfactants (preparation of phys. interpenetrating nanocomposite from polyethylene and silica) IT 9002-88-4, LDPE (or HDPE; preparation of phys. interpenetrating nanocomposite from polyethylene and silica) ΙT 7631-86-9P, Silica, preparation (preparation of phys. interpenetrating nanocomposite from polyethylene and silica) REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT L45 ANSWER 4 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN 2006:1147753 HCAPLUS Full-text ACCESSION NUMBER: DOCUMENT NUMBER: 146:465120 TITLE: Compatibility of a novel composite microporous polymer electrolyte with anode of Li-ion batteries AUTHOR(S): Chen, Zuo-Feng; Jiang, Yan-Xia; Xu, Jin-Mei; Zhuang, Quan-Chan; Huang, Ling; Dong, Quan-Feng; Sun, Shi-Gang CORPORATE SOURCE: State Key Lab Phys. Chem. Solid Surfaces, Dept. Chem., Coll. Chem. Chem. Eng., Xiamen Univ., Xiamen, 361005, Peop. Rep. China SOURCE: Gaodeng Xuexiao Huaxue Xuebao (2006), 27(10), 1937-1940 CODEN: KTHPDM; ISSN: 0251-0790 PUBLISHER: Gaodeng Jiaoyu Chubanshe DOCUMENT TYPE: Journal LANGUAGE: Chinese Entered STN: 02 Nov 2006 ED AB This novel composite microporous polymer electrolyte, SBA-15 CMPE, is made of poly(vinylidene fluoride-co-hexafluoropropylene) (PVdF-HFP) and mesoporous SBA-15. Electrochem. impedance spectroscopy, cyclic voltammetry, constant current polarization was used to study the effects of the storage time on the Li/SBA-15 CMPE interface properties. The polymer film composite integrative electrode, MCMB/SBA-15 CMPE, was prepared through a process that the membrane solution was cast directly on the mesocarbon microbead (MCMB) electrode with H2O-solubility bond. The result of CV shows that a model cell with 3electrode based on the MCMB/SBA-15 CMPE displayed a good cyclical performance. EIS showed the process of formation, growth and stabilization of solid electrolyte interphase (SEI) film on MCMB/SBA-15 CMPE electrode during the 1st cathodic polarization.

ΙŢ 9011-17-0 (PVdF-HFP, composite with SBA-15; compatibility of novel composite microporous polymer electrolyte with anodes of Li-ion batteries) RN 9011-17-0 HCAPLUS 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene CN (CA INDEX NAME) CM 1 CRN 116-15-4 CMF C3 F6 CF2 F-C-CF3 CM 2 CRN 75-38-7 CMF C2 H2 F2 CH₂ F-C-F ΙT 7631-86-9, SBA-15, uses (mesoporous, composite with PVdF-HFP; compatibility of novel composite microporous polymer electrolyte with anodes of Li-ion batteries) 7631-86-9 HCAPLUS RN CN Silica (CA INDEX NAME) CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) IT Battery electrolytes Polymer electrolytes (compatibility of novel composite microporous polymer electrolyte with anodes of Li-ion batteries) IT Porous materials (microporous; compatibility of novel composite microporous polymer electrolyte with anodes of Li-ion batteries) ΙT 9011-17-0 (PVdF-HFP, composite with SBA-15; compatibility of novel composite microporous polymer electrolyte with anodes of Li-ion batteries) IT**7631-86-9**, SBA-15, uses (mesoporous, composite with PVdF-HFP; compatibility of novel

composite microporous polymer electrolyte with anodes of Li-ion batteries)

L45 ANSWER 5 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2006:1073951 HCAPLUS Full-text

DOCUMENT NUMBER: 147:215487

TITLE: Nafion/PTFE/silicate composite membranes for

direct methanol fuel cells

AUTHOR(S): Huang, Li-Ning; Chen, Li-Chun; Yu, T. Leon; Lin,

Hsiu-Li

CORPORATE SOURCE: Department of Chemical Engineering & Materials

Science, Yuan Ze University, Taoyuan, 32026,

Taiwan

SOURCE: Journal of Power Sources (2006), 161(2), 1096-1105

CODEN: JPSODZ; ISSN: 0378-7753

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 16 Oct 2006

AΒ Poly(tetrafluoro ethylene) (PTFE)/Nafion composite membranes (PN composite membranes) were prepared by impregnating micro-porous PTFE membranes in Nafion/2-propanol/water solns. The PN composite membranes were then further impregnated with tetraethoxysilane (TEOS) solns. to prepare PTFE/Nafion/silicate (PNS) composite membranes. The influence of hybridizing silicate into the PN membranes on their direct methanol fuel cell (DMFC) performance and methanol crossover was studied. Silicate in PN membranes causes reduction both in proton conductivity and methanol crossover of membranes. Thus PNS had a higher voltage than PN at low current densities due to the lower methanol crossover of PNS. However, at high current densities, PNS had a lower voltage than PN due to the higher resistance to proton transference of PNS. The range of lower current densities where PNS had a higher voltage than PN was i = 0-120 mA-cm-2 when the methanol feed concentration was 2 M. This lower c.d. range became broader as the methanol feed concentration was increased, and it was broadened to i = 0-190 mA-cm-2 as the methanol feed concentration was increased to 5 M. A comparison of the methanol crossover on the DMFC performance of PN and PNS with Nafion-112 was also studied. Nafion-112 exhibits higher methanol electroosmosis than PN and Thus at a high c.d., the higher methanol crossover via electroosmosis caused Nafion-112 to have a lower voltage than PN and PNS.

IT **7631-86-9P**, Silica, uses

(composites with Nafion and PTFE; Nafion/PTFE/silicate composite membranes for direct methanol fuel cells)

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

IT 9002-84-0, Poly(tetrafluoro ethylene)

(composites with Nafion and optionally silica; Nafion/PTFE/silicate composite membranes for direct methanol fuel cells)

RN 9002-84-0 HCAPLUS

CN Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME)

CM 1

CRN 116-14-3

CMF C2 F4

F F F F C F F

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Interpenetrating polymer networks

(Nafion/PTFE composite; Nafion/PTFE/silicate composite membranes for direct methanol fuel cells)

IT 7631-86-9P, Silica, uses

(composites with Nafion and PTFE; Nafion/PTFE/silicate composite membranes for direct methanol fuel cells)

IT 9002-84-0, Poly(tetrafluoro ethylene)

(composites with Nafion and optionally silica; Nafion/PTFE/silicate composite membranes for direct methanol fuel cells)

REFERENCE COUNT:

32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 6 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2006:927538 HCAPLUS Full-text

DOCUMENT NUMBER:

CORPORATE SOURCE:

146:166050

TITLE:

SOURCE:

AUTHOR(S):

Laser printing of nanocomposite solid-state electrolyte membranes for Li micro-batteries

Ollinger, M.; Kim, H.; Sutto, T.; Pique, A.
Materials Science & Technology Division, Naval

Research Laboratory, Washington, DC, 20375, USA Applied Surface Science (2006), 252(23), 8212-8216

CODEN: ASUSEE; ISSN: 0169-4332

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 11 Sep 2006

Nanocomposite solid-state electrolyte membranes were deposited, using a laser direct-write technique, from a suspension of an ionic liquid (1,2-dimethyl-3-n-butylimidazolium-bis-trifluoromethanesulfonylimide)/ polymer (poly(vinylidene fluoride-co-hexafluoropropylene)) matrix with dispersed TiO2 nano-particles. The electrochem. and mech. properties of the membranes are reported and discussed. These membranes show good electrochem. behavior for ionic liqs. while maintaining the strength and flexibility of the polymer matrix. This combination of phys. properties and deposition technique makes these deposited nanocomposite membranes suitable for use as an electrolyte/separator in Li micro-batteries. Sample Li micro-batteries using these laser printed nanocomposite membranes were fabricated and their charge/discharge behavior tested, demonstrating the feasibility of using these nanocomposite membranes in Li micro-battery applications.

IT 9011-17-0, Hexafluoropropylene vinylidene fluoride copolymer (PVdF-HFP, polymer matrix with DMBITFSI, nanocomposite with titania; laser printing of nanocomposite solid-state electrolyte membranes for Li micro-batteries)

RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (CA INDEX NAME)

CM 1

CRN 116-15-4 CMF C3 F6

CF2 || F-C-CF3

CM 2

CRN 75-38-7 CMF C2 H2 F2

CH₂ F-C-F

IT 13463-67-7, Titanium oxide (TiO2), uses

(nanocomposite with polymer matrix; laser printing of nanocomposite
solid-state electrolyte membranes for Li micro-batteries)

RN 13463-67-7 HCAPLUS

CN Titanium oxide (TiO2) (CA INDEX NAME)

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38

IT Battery electrolytes

Laser printers

Nanocomposites

Secondary battery separators

Solid electrolytes

(laser printing of nanocomposite solid-state electrolyte membranes for Li micro-batteries)

IT 9011-17-0, Hexafluoropropylene vinylidene fluoride copolymer (PVdF-HFP, polymer matrix with DMBITFSI, nanocomposite with titania; laser printing of nanocomposite solid-state electrolyte membranes for Li micro-batteries)

IT 13463-67-7, Titanium oxide (TiO2), uses

(nanocomposite with polymer matrix; laser printing of nanocomposite
solid-state electrolyte membranes for Li micro-batteries)

REFERENCE COUNT:

THERE ARE 17 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 7 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2006:734545 HCAPLUS Full-text

17

DOCUMENT NUMBER:

145:191969

TITLE: Bilayer electrolyte for a lithium battery

INVENTOR(S): Deschamps, Marc PATENT ASSIGNEE(S): Batscap, Fr.

SOURCE: PCT Int. Appl., 15 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: French

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PA'	PATENT NO.						KIND DATE			APPLICATION NO.						DATE	
· -				A2 20060727 A3 20070705			WO 2006-FR125						20060119				
		AE,	AG,	AL,	AM,	AT,	AU,	AZ,									
								DE, HU,									
								LR,									
								NG, SK,									
		ΤZ,	UA,	UG,	US,	UZ,	VC,	VN,	YU,	ZA,	ZM,	ZW					
	RW:							DE,									
								MC, GA,									
		TG,	BW,	GH,	GM,	KE,	LS,	MW,	MZ,	NA,	SD,	SL,	SZ,	TZ,	UG,		
77	0001							MD,									
	2881: 2881:	_			A1 B1		2006 2007			FR 20	005-	715			20	0050124	
PRIORITY	Y APP	LN.	INFO	. :						FR 20	005-	715		i	A 20	0050124	

ED Entered STN: 27 Jul 2006

The invention relates to a bilayer polymer electrolyte for a lithium battery. The inventive electrolyte comprises N and P layers which are each formed by a solid solution of an Li salt in a polymer material, said Li salt being the same in both layers, whereby the concentration of polymer material is at least 60% by weight and the concentration of lithium salt is 5-25% by weight The polymer material from layer P contains a solvating polymer and a non-solvating polymer, the weight ratio between the two polymers being such that the solvating polymer forms a continuous network. The polymer material from layer N is formed by a solvating polymer and, optionally, a non-solvating polymer, the weight ratio between the two polymers being such that the solvating polymer forms a continuous network and the non-solvating polymer does not form a continuous network.

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses
13463-67-7, Titania, uses

(bilayer electrolyte for lithium battery)

RN 1344-28-1 HCAPLUS

CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

CN Titanium oxide (TiO2) (CA INDEX NAME) 0<u>— Ti</u> — 0 ΙT 9002-84-0, Poly(tetrafluoroethene) 9002-86-2, Polyvinyl chloride (bilayer electrolyte for lithium battery) RN 9002-84-0 HCAPLUS Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME) CN CM1 CRN 116-14-3 CMF C2 F4 RN 9002-86-2 HCAPLUS CN Ethene, chloro-, homopolymer (CA INDEX NAME) CM1 CRN 75-01-4 CMF C2 H3 C1 $H_2C \longrightarrow CH - C1$ IT9011-17-0, Hexafluoropropene-vinylidene difluoride copolymer 24937-79-9, Polyvinylidene difluoride (composite with magnesium oxide and lithium salt and POE; bilayer electrolyte for lithium battery) RN 9011-17-0 HCAPLUS CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (CA INDEX NAME) CM 1

CF2 F-C-CF3

CRN 116-15-4 CMF C3 F6

```
CM
          2
     CRN 75-38-7
     CMF C2 H2 F2
   CH<sub>2</sub>
 F-C-F
RN
     24937-79-9 HCAPLUS
     Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)
CN
     CM
          1
     CRN 75-38-7
     CMF C2 H2 F2
   CH<sub>2</sub>
 F-C-F
CC
     52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
     Section cross-reference(s): 38
     Battery electrolytes
IT
     Extrusion of plastics and rubbers
     Fillers
     Films
     Phase separation
     Polymer electrolytes
        (bilayer electrolyte for lithium battery)
ΙT
     Laminated materials
        (bilayer electrolyte structure; bilayer electrolyte for lithium
ΙT
     1344-28-1, Alumina, uses 7631-86-9, Silica, uses
     12047-27-7, Barium titanate (BaTiO3), uses 13463-67-7,
     Titania, uses
        (bilayer electrolyte for lithium battery)
ΙT
     75-01-4D, Vinyl chloride, copolymers containing
                                                        75-35-4D, copolymers
     containing 75-38-7D, Vinylidene difluoride, copolymers containing
     75-56-9D, Propylene oxide, copolymers containing, lithium ion complexes
     79-38-9D, Chlorotrifluoroethene, copolymers containing
                                                              106-89-8D,
     Epichlorohydrin, copolymers containing, lithium ion complexes
     Allylglycidyl ether, copolymers containing, lithium ion complexes
     116-14-3D, Tetrafluoroethene, copolymers containing
                                                            9002-81-7D,
     Poly(oxymethylene), lithium ion complexes
                                                  9002-83-9,
     Poly(chlorotrifluoroethene) 9002-84-0,
                               9002-85-1, Poly(vinylidene dichloride)
     Poly(tetrafluoroethene)
     9002-86-2, Polyvinyl chloride
                                      24969-06-0D,
     Poly(epichlorohydrin), lithium ion complexes
                                                     25322-69-4D,
                                                   25639-25-2D,
     Polypropylene oxide, lithium ion complexes
     Poly(allylglycidyl ether), lithium ion complexes
        (bilayer electrolyte for lithium battery)
```

IT 9011-17-0, Hexafluoropropene-vinylidene difluoride copolymer 24937-79-9, Polyvinylidene difluoride

(composite with magnesium oxide and lithium salt and POE; bilayer electrolyte for lithium battery)

L45 ANSWER 8 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2006:170312 HCAPLUS Full-text

DOCUMENT NUMBER: 144:216134

TITLE: Nonaqueous electrolyte battery

INVENTOR(S):
Okamoto, Tomohito

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan; Sanyo Gs Soft

Energy Co., Ltd.

SOURCE: U.S. Pat. Appl. Publ., 9 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	DATE		
US 2006040184	A1	20060223	US 2005-201684	20050810	
JP 2006059635	A	20060302	JP 2004-239328	20040819	
CN 1738094	A	20060222	CN 2005-10092668	20050819	
PRIORITY APPLN. INFO.:			JP 2004-239328 A	20040819	

ED Entered STN: 24 Feb 2006

AB In the nonaq. electrolyte battery comprising a pos. electrode, a neg. electrode and a polymer electrolyte layer, the theor. capacity per unit area of the opposed pos. electrode and neg. electrode was set to larger than or equal to 3.00 mA-h/cm2 and smaller than or equal to 3.20 mA-h/cm2, the polymer electrolyte layer was formed as a porous layer including inorg. solid filler and the theor. battery capacity was set to larger than or equal to 800 mA-h and smaller than or equal to 4 A-h.

IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses 24937-79-9, PVDF

(nonaq. electrolyte battery)

RN 1344-28-1 HCAPLUS

CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 13463-67-7 HCAPLUS

CN Titanium oxide (TiO2) (CA INDEX NAME)

0---Ti-0

RN 24937-79-9 HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)

CM 1

CRN 75-38-7 CMF C2 H2 F2 CH₂ II F-C-F

INCL 429306000; 429231100; 429231800

CC 52-2 (Electrochemical, Radiational, and Thermal Energy

Technology)

Section cross-reference(s): 38

IT Battery electrolytes

Polymer electrolytes

Secondary batteries

(nonaq. electrolyte battery)

IT 1344-28-1, Alumina, uses 13463-67-7, Titania, uses

24937-79-9, PVDF

(nonaq. electrolyte battery)

L45 ANSWER 9 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: DOCUMENT NUMBER:

2005:985255 HCAPLUS <u>Full-text</u> 143:289426

TITLE:

Method of fabrication of lithium cationic

single-ion conducting inorganic filler-containing

composite polymer electrolyte for lithium

secondary battery

INVENTOR(S):

Lee, Young Gi; Kim, Kwang Man; Ryu, Kwang Sun;

Chang, Soon Ho

PATENT ASSIGNEE(S):

S. Korea

SOURCE:

U.S. Pat. Appl. Publ., 13 pp., Cont.-in-part of

U.S. Ser. No. 750,152.

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005196677	A1	20050908	US 2005-97730	20050401
US 2004214089	A1	20041028	US 2003-750152	20031230
US 7211352	B2	20070501		
KR 2005103068	Α	20051027	KR 2004-28470	20040424
EP 1598896	A1	20051123	EP 2005-251844	20050324
EP 1598896	B1	20070502		
R: AT, BE, CH,	DE, DK	, ES, FR, GE	B, GR, IT, LI, LU,	NL, SE, MC,
PT, IE, SI,	LT, LV	, FI, RO, MM	K, CY, AL, TR, BG,	CZ, EE, HU,
PL, SK, BA,	HR, IS	, YU		
AT 361553	T	20070515	AT 2005-251844	20050324
JP 2005310795	A	20051104	JP 2005-125449	20050422
PRIORITY APPLN. INFO.:			US 2003-750152	A2 20031230
			KR 2004-28470	A . 20040424
			KR 2003-26420	A 20030425

ED Entered STN: 09 Sep 2005

AB Provided are a composite polymer electrolyte for a lithium secondary battery in which a composite polymer matrix multi-layer structure composed of a plurality of polymer matrixes with different pore sizes is impregnated with an electrolyte solution, and a method of manufacturing the same. Among the

ΙT

RN CN

RN CN

RNCN

polymer matrixes, a microporous polymer matrix with a smaller pore size contains a lithium cationic single-ion conducting inorg. filler, thereby enhancing ionic conductivity, the distribution uniformity of the impregnated electrolyte solution, and maintenance characteristics. The microporous polymer matrix containing the lithium cationic single-ion conducting inorg. filler is coated on a surface of a porous polymer matrix to form the composite polymer matrix multi-layer structure, which is then impregnated with the electrolyte solution, to manufacture the composite polymer electrolyte. The composite polymer electrolyte is used in a unit battery. The composite polymer matrix structure can increase mech. properties. The introduction of the lithium cationic single-ion conducting inorg. filler can provide excellent ionic conductivity and high rate discharge characteristics. 9002-84-0, Ptfe 9002-86-2, Pvc 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9004-34-6, Cellulose, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 28960-88-5, Trifluoroethylene-vinylidene fluoride copolymer (method of fabrication of lithium cationic single-ion conducting inorg. filler-containing composite polymer electrolyte for lithium secondary battery) 9002-84-0 HCAPLUS Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME) CM 1 CRN 116-14-3 CMF C2 F4 9002-86-2 HCAPLUS Ethene, chloro-, homopolymer (CA INDEX NAME) CM 1 CRN 75-01-4 CMF C2 H3 C1 H2C == CH-C1 9002-88-4 HCAPLUS Ethene, homopolymer (CA INDEX NAME) CM1 CRN 74-85-1 CMF C2 H4

 $H_2C \longrightarrow CH_2$

```
RN
     9003-07-0 HCAPLUS
     1-Propene, homopolymer (CA INDEX NAME)
CN
     CM 1
     CRN 115-07-1
     CMF C3 H6
 H3C-CH \longrightarrow CH2
     9004-34-6 HCAPLUS
RN
CN
     Cellulose (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN
    9011-17-0 HCAPLUS
     1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
CN
     (CA INDEX NAME)
     CM
          1
     CRN 116-15-4
     CMF C3 F6
   CF2
 F-C-CF3
     CM 2
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F_C_F
RN
    24937-79-9 HCAPLUS
CN
    Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)
    CM
          1
     CRN 75-38-7
     CMF C2 H2 F2
```

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CH2
RN
     25014-41-9 HCAPLUS
CN
     2-Propenenitrile, homopolymer (CA INDEX NAME)
     CM
           1
     CRN 107-13-1
     CMF C3 H3 N
 H 2 C \longrightarrow C H - C \longrightarrow N
RN
     28960-88-5 HCAPLUS
CN
     Ethene, 1,1,2-trifluoro-, polymer with 1,1-difluoroethene (CA INDEX
     NAME)
     CM
           1
     CRN 359-11-5
     CMF C2 H F3
 F- C- CH-F
     CM
           2
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F_C_F
     7631-86-9D, Silica, sulfonated, lithium salt
ΙT
        (method of fabrication of lithium cationic single-ion conducting
```

inorg. filler-containing composite polymer electrolyte for lithium

secondary battery)

Silica (CA INDEX NAME)

7631-86-9 HCAPLUS

RN

CN

0 = Si = 0

```
ICM H01M010-40
IC
     ICS H01M002-16
INCL 429309000; 429307000; 429251000; 429252000
     52-2 (Electrochemical, Radiational, and Thermal Energy
     Technology)
     Section cross-reference(s): 38
ΙT
     Battery electrolytes
     Ionic conductors
     Polymer electrolytes
        (method of fabrication of lithium cationic single-ion conducting
        inorg. filler-containing composite polymer electrolyte for lithium
        secondary battery)
IT
     Composites
        (polymer electrolyte; method of fabrication of lithium cationic
        single-ion conducting inorg. filler-containing composite polymer
        electrolyte for lithium secondary battery)
IT
     75-77-4D, Chlorotrimethylsilane, reaction products with
     chlorosufonated silica, lithium salts
                                             96-47-9, 2-
     Methyltetrahydrofuran
                           96-48-0, \gamma-Butyrolactone
                                                        96-49-1,
     Ethylene carbonate
                         105-58-8, Diethyl carbonate
                                                        107-31-3, Methyl
               108-32-7, Propylene carbonate 109-94-4, Ethyl formate
     109-99-9, Thf, uses 110-71-4 616-38-6, Dimethyl carbonate
     623-53-0, Methyl ethyl carbonate
                                        7791-03-9, Lithium perchlorate
     9002-84-0, Ptfe 9002-86-2, Pvc 9002-88-4,
     Polyethylene 9003-07-0, Polypropylene
                                            9003-20-7, Polyvinyl
              9003-21-8, Polymethylacrylate 9003-32-1, Polyethylacrylate
     acetate
     9003-42-3, Polyethylmethacrylate 9003-49-0, Polybutylacrylate
     9003-63-8, Polybutylmethacrylate 9004-34-6, Cellulose, uses
     9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene
     fluoride copolymer
                         14283-07-9, Lithium tetrafluoroborate
     21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf
     25014-41-9, Polyacrylonitrile
                                     25322-68-3, Peo
                                                       25322-69-4,
                           25684-76-8, Tetrafluoroethylene-vinylidene
     Polypropylene oxide
     fluoride copolymer 28960-88-5, Trifluoroethylene-vinylidene
     fluoride copolymer
                         33454-82-9, Lithium triflate 90076-65-6
     162684-16-4, Lithium manganese nickel oxide
        (method of fabrication of lithium cationic single-ion conducting
        inorg. filler-containing composite polymer electrolyte for lithium
        secondary battery)
ΙT
     7631-86-9D, Silica, sulfonated, lithium salt
        (method of fabrication of lithium cationic single-ion conducting
        inorg. filler-containing composite polymer electrolyte for lithium
        secondary battery)
L45 ANSWER 10 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN
                         2005:983911 HCAPLUS Full-text
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         143:289420
TITLE:
                         Secondary battery using porous
                         film type solvent-free polymer electrolyte
                         filled with oligomer/prepolymer electrolyte
INVENTOR(S):
                         Kwak, Seung-Yeop; Jeon, Jae-Deok
PATENT ASSIGNEE(S):
                         Seoul National University Industry Foundation, S.
                         Korea
SOURCE:
                         PCT Int. Appl., 26 pp.
```

CODEN: PIXXD2

DOCUMENT TYPE: LANGUAGE: Patent English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

```
PATENT NO.
                     KIND DATE
                                       APPLICATION NO.
                                                             DATE
                      ----
                                        -----
                      A2 20050909 WO 2005-KR525
A3 20060202
    WO 2005081646
                                                            20050226
    WO 2005081646
        W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
            CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
            GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP,
            KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX,
            MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE,
            SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,
            VC, VN, YU, ZA, ZM, ZW
        RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
            AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
            DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
            NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
            GN, GQ, GW, ML, MR, NE, SN, TD, TG
                                      KR 2004-12983
    KR 2005087263
                   A 20050831
                                                             20040226
                                        KR 2004-12983 A 20040226
PRIORITY APPLN. INFO.:
```

ED Entered STN: 09 Sep 2005

AB Provided are a solvent-free polymer electrolyte and a secondary battery employing the same. The solvent-free polymer electrolyte includes: a porous film including a first polymer and a second oligomer, the first polymer being at least one selected from the group consisting of poly(vinylidene fluorideco- hexafluoropropylene) copolymers, polyvinylidenefluorides, polymethylmethacrylates, polyacrylonitriles, polyethyleneoxides, and celluloses having a polyether chain and the second oligomer being at least one selected from the group consisting of poly(ethylene oxide-co-ethylene carbonate) copolymers with at least one terminal groups substituted by a halogen atom and polyethyleneglycols with at least one terminal groups substituted by a halogen atom; and an electrolyte present in the pores of the porous film and including the second oligomer and a lithium salt. Since the solvent-free polymer electrolyte contains no liquid organic electrolyte, it is not accompanied by problems caused by leakage or evaporation of an organic solvent, unlike a gel-type polymer electrolyte. Furthermore, the solvent-free polymer electrolyte has enhanced ionic conductivity as compared to a conventional solvent-free polymer electrolyte.

IT 9004-34-6, Cellulose, uses 9011-17-0,

Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9

, Pvdf 25014-41-9, Polyacrylonitrile

(secondary battery using porous film type

solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

RN 9004-34-6 HCAPLUS

CN Cellulose (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (CA INDEX NAME)

CM 1

CRN 116-15-4 CMF C3 F6

```
CF2
 F-C-CF3
     CM
          2
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F_C_F
     24937-79-9 HCAPLUS
RN
CN
     Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F-C-F
RN
     25014-41-9 HCAPLUS
CN
     2-Propenenitrile, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 107-13-1
     CMF C3 H3 N
 H 2 C == C H - C == N
ΙT
     1344-28-1, Alumina, uses 7631-86-9, Silica, uses
     13463-67-7, Titania, uses
        (secondary battery using porous film type
        solvent-free polymer electrolyte filled with oligomer/prepolymer
        electrolyte)
RN
     1344-28-1 HCAPLUS
     Aluminum oxide (Al2O3)
CN
                            (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
```

```
7631-86-9 HCAPLUS
RN
CN
     Silica (CA INDEX NAME)
 RN
     13463-67-7 HCAPLUS
CN
     Titanium oxide (TiO2) (CA INDEX NAME)
 0---Ti---0
IC
     ICM H01M
     52-2 (Electrochemical, Radiational, and Thermal Energy
     Technology)
     Section cross-reference(s): 38
ΙT
     Polyoxyalkylenes, uses
        (halogenated; secondary battery using porous film
        type solvent-free polymer electrolyte filled with
        oligomer/prepolymer electrolyte)
ΙT
     Fillers
        (inorg.; secondary battery using porous film
        type solvent-free polymer electrolyte filled with
        oligomer/prepolymer electrolyte)
IT
     Battery anodes
       Battery electrolytes
     Polymer electrolytes
     Secondary batteries
        (secondary battery using porous film type
        solvent-free polymer electrolyte filled with oligomer/prepolymer
        electrolyte)
IT
     Carbonaceous materials (technological products)
     Fluoropolymers, uses
     Oligomers
        (secondary battery using porous film type
        solvent-free polymer electrolyte filled with oligomer/prepolymer
        electrolyte)
ΙT
     Zeolites (synthetic), uses
        (secondary battery using porous film type
        solvent-free polymer electrolyte filled with oligomer/prepolymer
        electrolyte)
    7439-93-2D, Lithium, intercalation compound
ΙT
                                                   7791-03-9, Lithium
     perchlorate 9004-34-6, Cellulose, uses 9011-14-7, Pmma
     9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
     12017-96-8, Chromium lithium oxide (CrLiO2)
                                                   12031-65-1, Lithium
     nickel oxide (LiNiO2) 12057-17-9, Lithium manganese oxide (LiMn2O4)
     12162-79-7, Lithium manganese oxide limno2
                                                12190-79-3, Cobalt
     lithium oxide (CoLiO2)
                             14283-07-9, Lithium tetrafluoroborate
     21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf
    25014-41-9, Polyacrylonitrile
                                     25322-68-3, Peo
                                                       29935-35-1,
    Lithium hexafluoroarsenate 33454-82-9, Lithium triflate
                                                                 90076-65-6
```

106818-19-3D, Ethylene carbonate-ethylene oxide copolymer, halogenated

131651-65-5

132843-44-8

(secondary battery using porous film type

solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

IT 25608-11-1DP, chloride terminated

(secondary battery using porous film type

solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses

13463-67-7, Titania, uses

(secondary battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

IT 37220-89-6, Lithium aluminate

> $(\gamma-;$ secondary battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

L45 ANSWER 11 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN 2005:735154 HCAPLUS Full-text ACCESSION NUMBER:

DOCUMENT NUMBER:

143:196855

TITLE:

SOURCE:

Protected active metal electrode and battery cell structures with nonaqueous interlayer architecture

INVENTOR(S):

Visco, Steven J.; Katz, Bruce D.; Nimon, Yevgeniy

S.; De Jonghe, Lutgard C.

PATENT ASSIGNEE(S):

Polyplus Battery Company, USA U.S. Pat. Appl. Publ., 20 pp.

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PA	PATENT NO.				KIND DATE				APPL	ICAT	DATE					
US	2005	 1758	 94				2005	0811		US 2	004-	 8249	 44		2	0040414
AU	2004	3166	38		A1		2005	0909		AU 2	004-	3166	38		2	0041008
CA	2555	637			A1		2005	0909		CA 2	004-	2555	637		2	0041008
WO	WO 2005083829			A2 20050909				WO 2	004-	US33	371		2	0041008		
WO	2005	0838	29		A3		2006	0504								
	W:	ΑĒ,	AG,	AL,	AM,	ΑT,	AU,	AZ,	BA,	BB,	BG,	BR,	BW,	BY,	BZ,	CA,
							CZ,									
							HR,									
							LS,									
		MX,	MZ,	NA,	NI,	NO,	NZ,	OM,	PG,	PH,	PL,	PT,	RO,	RU,	SC,	SD,
		SE,	SG,	SK,	SL,	SY,	ТJ,	TM,	TN,	TR,	TT,	TZ,	UA,	UG,	US,	UZ,
		VC,	VN,	YU,	ZA,	ZM,	zw									
	RW:	BW,	GH,	GM,	KE,	LS,	MW,	ΜZ,	NA,	SD,	SL,	SZ,	TZ,	UG,	ZM,	ZW,
		AM,	AZ,	BY,	KG,	KZ,	MD,	RU,	ТJ,	TM,	ΑT,	BE,	BG,	CH,	CY,	CZ,
		DE,	DK,	EE,	ES,	FI,	FR,	GB,	GR,	ΗU,	ΙE,	IT,	LU,	MC,	NL,	PL,
		PT,	RO,	SE,	SI,	SK,	TR,	BF,	ВJ,	CF,	CG,	CI,	CM,	GA,	GN,	GQ,
		GW,	ML,	MR,	ΝĖ,	SN,	TD,	TG								
EP	1714	349			A2		2006	1025		EP 2	004-	7946	55		20	0041008
	R:						ES,			-		-				•
		PT,	ΙE,	SI,	LT,	LV,	FI,	RO,	MK,	CY,	AL,	TR,	BG,	CZ,	EE,	HU,
			SK,	HR												
	1938				A		2007				004-					0041008
	2004						2007				004-					0041008
	2007						2007				006-		-			0041008
	20061				A		2006	1020			006-1					0060807
PRIORIT	Y APPI	LN. :	INFO	. :					ı	US 2	004-	5425	32P]	P 20	0040206

US 2004-548231P

P 20040227

US 2004-824944 A 20040414 WO 2004-US33371 W 20041008 ED Entered STN: 12 Aug 2005 AΒ The invention concerns active metal and active metal intercalation electrode structures and battery cells having ionically conductive protective architecture including an active metal (e.g., lithium) conductive impervious layer separated from the electrode (anode) by a porous separator impregnated with a non-aqueous electrolyte (anolyte). This protective architecture prevents the active metal from deleterious reaction with the environment on the other (cathode) side of the impervious layer, which may include aqueous or nonaq. liquid electrolytes (catholytes) and/or a variety electrochem. active materials, including liquid, solid and gaseous oxidizers. Safety additives and designs that facilitate manufacture are also provided. IT1344-28-1, Alumina, uses 7631-86-9, Silica, uses 13463-67-7, Titania, uses (glass ceramic; protected active metal electrode and battery cell structures with nonag. interlayer architecture) RN 1344-28-1 HCAPLUS CN Aluminum oxide (Al2O3) (CA INDEX NAME) *** STRUCTURE DIAGRAM IS NOT AVAILABLE *** 7631-86-9 HCAPLUS RNSilica (CA INDEX NAME) CN RN 13463-67-7 HCAPLUS Titanium oxide (TiO2) (CA INDEX NAME) CN 0-Ti-0 ΙT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile (protected active metal electrode and battery cell structures with nonaq. interlayer architecture) 9011-17-0 HCAPLUS RN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene CN (CA INDEX NAME) CM 1 CRN 116-15-4 CMF C3 F6

```
CF2
 F-C-CF3
     CM
          2
     CRN 75-38-7
     CMF C2 H2 F2
   CH<sub>2</sub>
 F_ C_ F
RN
     24937-79-9 HCAPLUS
     Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)
CN
     CM
          1
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F-C-F
RN
     25014-41-9 HCAPLUS
CN
     2-Propenenitrile, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 107-13-1
     CMF C3 H3 N
 H 2 C --- C H-- C --- N
     ICM H01M004-60
IC
INCL 429212000
     52-2 (Electrochemical, Radiational, and Thermal Energy
     Technology)
     Section cross-reference(s): 72
ΙT
     Battery anodes
      Battery electrolytes
     Ceramics
```

Gelation agents Glass ceramics Ionic liquids

Oxidizing agents

Polymerization catalysts

Primary batteries

Primary battery separators

Seawater

Secondary batteries

(protected active metal electrode and battery cell structures with nonag. interlayer architecture)

1310-53-8, Germanium oxide (GeO2), uses TT 1314-23-4, Zirconia, uses 1314-56-3, Phosphorus oxide (P2O5), uses 1344-28-1, Alumina,

uses 7631-86-9, Silica, uses 12024-21-4, Gallium oxide (Ga2O3) 12057-24-8, Lithia, uses 13463-67-7, Titania, uses

(glass ceramic; protected active metal electrode and battery cell structures with nonaq. interlayer architecture)

9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer ΙT 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25322-68-3, Peo

> (protected active metal electrode and battery cell structures with nonaq. interlayer architecture)

L45 ANSWER 12 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:

2005:638576 HCAPLUS Full-text

DOCUMENT NUMBER:

143:136319

TITLE:

Alkaline polymer electrolyte membrane and its

application

INVENTOR(S):

Wang, Chen Kuei Yung; Yang, Chun-Chen; Lin,

Sheng-Jen

PATENT ASSIGNEE(S):

Nan Ya Plastics Corporation, Taiwan

SOURCE:

U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE		
	- 					
US 2005158632	A1	20050721	US 2005-34256	20050113		
TW 251366	В	20060311	TW 2004-93101333	20040119		
CN 1560129	Α	20050105	CN 2004-10008619	20040312		
PRIORITY APPLN. INFO.:			TW 2004-93101333 A	20040119		

ED Entered STN: 22 Jul 2005

AB The invention concerns an alkaline polymer electrolyte membrane formed by mixing hydrophilic PVA, PECH and DMSO organic solvent possessing high mech. strength and superior electrochem. stability, and with an ionic conductivity higher than 0.01 S/cm under normal temperature which may supersede the traditional PP/PE non-woven fabric separator and KOH electrolyte; in addition, the alkaline polymer electrolyte membrane shall be combined with a base material of glass fiber web, PE/PP porous film and Nylon porous film with thickness of 20 $\mu m-800$ μm to obtain a composite solid-state alkaline polymer electrolyte membrane, which may be used as a separator membrane applicable inside a Zn-air cell, a Ni-hydrogen cell, a nickel-cadmium cell, a nickel-zinc cell, a fuel cell, a metal-air cell, a primary and secondary alkaline (Zn-MnO2) cells, and an alkaline capacitors.

ΙT 7631-86-9, Silica, uses 13463-67-7, Titania, uses

(alkaline polymer electrolyte membrane and its application)

RN 7631-86-9 HCAPLUS

Silica (CA INDEX NAME) CN

0<u>—</u>Si<u>—</u>0

RN 13463-67-7 HCAPLUS CN Titanium oxide (TiO2) (CA INDEX NAME) 0-Ti-0 IT 9003-07-0, Polypropylene (alkaline polymer electrolyte membrane and its application) RN 9003-07-0 HCAPLUS CN 1-Propene, homopolymer (CA INDEX NAME) CM1 CRN 115-07-1 CMF C3 H6 $H3C-CH \longrightarrow CH2$ ICM H01M010-26 ICS H01M002-14; H01M006-04 INCL 429309000; 429206000; 429303000; 429317000; 429144000 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38, 76 ΙT Battery electrolytes Fuel cell separators Ionic conductivity Primary battery separators Secondary batteries Secondary battery separators (alkaline polymer electrolyte membrane and its application) ΙT 7631-86-9, Silica, uses 13463-67-7, Titania, uses (alkaline polymer electrolyte membrane and its application) ΙT 67-68-5, DMSO, uses 1310-58-3, Potassium hydroxide, uses 9003-07-0, Polypropylene 25322-68-3, Peo (alkaline polymer electrolyte membrane and its application) L45 ANSWER 13 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2005:74560 HCAPLUS Full-text DOCUMENT NUMBER: 142:317474 TITLE: Ionic transport in P(VDF-HFP)-PMMA-LiCF3SO3-(PC+DEC)-SiO2 composite gel polymer electrolyte AUTHOR(S): Saikia, D.; Kumar, A. CORPORATE SOURCE: Department of Physics, Napaam, Tezpur University, Assam, 784028, India SOURCE: European Polymer Journal (2005), 41(3), 563-568

CODEN: EUPJAG; ISSN: 0014-3057

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 28 Jan 2005

Composite gel polymer electrolytes composed of poly(vinylidene fluoride-co-hexafluoropropylene) P(VDF-HFP) and poly(Me methacrylate) (PMMA), propylene carbonate and di-Et carbonate (PC + DEC) as plasticizer, LiCF3SO3 as electrolyte salt, and fumed silica were prepared by solvent casting technique with various plasticizer-filler ratio. Films of thickness 40-70 µm were characterized by a.c. impedance measurements at 303 K to 373 K. The presence of silica in polymer electrolyte resulted in enhancement of the ionic conductivity; maximum elec. conductivity of .apprx.1 + 10-3 S/cm at 303 K and .apprx.2.1 + 10-3 S/cm at 373 K was achieved. The FTIR spectra confirmed polymer-salt interactions. X-ray diffraction patterns evidence the increased amorphicity in the blended composite gel polymer electrolytes. Scanning electron micrographs show the dispersion of SiO2 particles in the polymer electrolyte.

IT 7631-86-9, Silica, properties

(amorphous, fume, conductivity enhancer; effect of fumed silica on ionic conductivity of poly(VDF-HFP)-PMMA-LiCF3SO3-(PC+DEC)-SiO2 composite gel electrolyte)

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

0-Si-0

RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (CA INDEX NAME)

CM 1

CRN 116-15-4 CMF C3 F6

CF2 || F-C-CF3

CM 2

CRN 75-38-7 CMF C2 H2 F2 CH₂ || F-C-F

37-5 (Plastics Manufacture and Processing) CC Section cross-reference(s): 72, 76 IT Polymer morphology (phase; effect of fumed silica on ionic conductivity of poly(VDF-HFP)-PMMA-LiCF3SO3-(PC+DEC)-SiO2 composite gel electrolyte) ΙT 7631-86-9, Silica, properties (amorphous, fume, conductivity enhancer; effect of fumed silica on ionic conductivity of poly(VDF-HFP)-PMMA-LiCF3SO3-(PC+DEC)-SiO2 composite gel electrolyte) IT 9011-14-7, Poly(methyl methacrylate) 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer (gel electrolyte component; effect of fumed silica on ionic conductivity of poly(VDF-HFP)-PMMA-LiCF3SO3-(PC+DEC)-SiO2 composite gel electrolyte) REFERENCE COUNT: 32 THERE ARE 32 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT L45 ANSWER 14 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2004:1149408 HCAPLUS Full-text DOCUMENT NUMBER: 142:243552 TITLE: Solvent-Free Composite PEO-Ceramic Fiber/Mat Electrolytes for Lithium Secondary Cells AUTHOR(S): Wang, Chunsheng; Zhang, Xiang-Wu; Appleby, A. John CORPORATE SOURCE: Center for Manufacturing Research, Department of Chemical Engineering, Tennessee Technological University, Cookeville, TN, 38505, USA SOURCE: Journal of the Electrochemical Society (2005), 152(1), A205-A209 CODEN: JESOAN; ISSN: 0013-4651 PUBLISHER: Electrochemical Society DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 29 Dec 2004 Solvent-free composite poly(ethylene oxide) (PEO)-ceramic fiber or mat AB electrolytes with high ionic conductivity and good interfacial stability were developed using high-ionic-conductivity La0.55Li0.35TiO3 fibers and mats. The conducting ceramic fibers can penetrate the cross section of the electrolyte film to provide long-range lithium-ion transfer channels, thus producing composite electrolytes with high conductivity A maximum room-temperature conductivity of 5.0 + 10-4 S cm-1 was achieved for 20% La0.55Li0.35TiO3 fiber in a PEO-LiN(SO2CF2CF3)2 mixture containing 12.5% Li+ in PEO. The maximum transference number obtained was 0.7. The ceramic fibers in this composite electrolyte are coated by a very thin PEO layer, which is sufficient to provide good interfacial stability with lithium-ion and lithium-metal anodes. IT 9004-34-6, Cellulose, processes (coating on ceramic fibers prior to sintering; solvent-free composite PEO-ceramic particle and ceramic fiber/mat electrolytes for lithium secondary cells)

9004-34-6 HCAPLUS

Cellulose (CA INDEX NAME)

RN

CN

^{***} STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 13463-67-7, Titania, uses

(phase in calcined ceramic; solvent-free composite PEO-ceramic particle and ceramic fiber/mat electrolytes for lithium secondary cells)

RN 13463-67-7 HCAPLUS

CN Titanium oxide (TiO2) (CA INDEX NAME)

0---Ti---0

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38, 57, 76

IT Reinforced plastics

(fiber-reinforced; solvent-free composite PEO-ceramic particle and ceramic fiber/mat electrolytes for lithium secondary cells)

IT Battery electrolytes

Electrode-electrolyte interface

Ionic conductivity

Transference number

(solvent-free composite PEO-ceramic particle and ceramic fiber/mat electrolytes for lithium secondary cells)

IT 9004-34-6, Cellulose, processes

(coating on ceramic fibers prior to sintering; solvent-free composite PEO-ceramic particle and ceramic fiber/mat electrolytes for lithium secondary cells)

IT 1312-81-8, Lanthanum oxide 12057-24-8, Lithium oxide, uses 13463-67-7, Titania, uses

(phase in calcined ceramic; solvent-free composite PEO-ceramic particle and ceramic fiber/mat electrolytes for lithium secondary cells)

REFERENCE COUNT:

THERE ARE 14 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 15 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2004:1067823 HCAPLUS Full-text

DOCUMENT NUMBER: 143:308999

TITLE: Composite polymer electrolyte with micro-

porous structure

AUTHOR(S): Li, Zhao-Hui; Su, Guang-Yao; Gao, De-Shu; Wang,

Xia-Yu; Li, Xiao-Ping

CORPORATE SOURCE: College of Chemistry, Xiangtan University,

Xiangtan, 411105, Peop. Rep. China

SOURCE: Yingyong Huaxue (2004), 21(11), 1160-1164

CODEN: YIHUED; ISSN: 1000-0518

PUBLISHER: Kexue Chubanshe

DOCUMENT TYPE: Journal LANGUAGE: Chinese ED Entered STN: 14 Dec 2004

AB Microporus composite **films** comprising vinylidene fluoride-hexafluoropropne copolymer and Al2O3 nanoparticles were prepared by a phase inversion technol. The porosity of the composite polymer **films** with 6% (mass fraction) Al2O3 nanoparticles is 40% higher than that of the polymer **films** without Al2O3 nanoparticles. The resulting gel polymer electrolyte possesses an ionic conductivity of 1.47 x 10-3 S/cm and the ionic transference number of 0.72. The characteristics of the interface between the surface of lithium metal and

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the polymer electrolytes, which were filled with and without AL203
      nanoparticles, were investigated by ac impedance technol.
ΙT
     9011-17-0, Vinylidene fluoride-hexafluoropropene copolymer
        (composite with alumina nanoparticles; porosity and ionic conductivity of
        micro-porous films of)
     9011-17-0 HCAPLUS
RN
CN
     1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
     (CA INDEX NAME)
     CM
          1
     CRN 116-15-4
     CMF C3 F6
    CF2
 F-C-CF3
     CM
          2
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F-C-F
ΙT
     1344-28-1, Alumina, uses
        (nanoparticles, composites with fluoropolymers; porosity and ionic
        conductivity of micro-porous films of)
RN
     1344-28-1 HCAPLUS
     Aluminum oxide (Al2O3) (CA INDEX NAME)
CN
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
     52-2 (Electrochemical, Radiational, and Thermal Energy
     Technology)
     alumina nanoparticle polymer composite microporous electrolyte
ST
     film; vinylidene fluoride hexafluoropropene copolymer alumina
     composite electrolyte film
ΙT
     Nanoparticles
        (alumina, composites with fluoropolymers; porosity and ionic conductivity
        of micro-porous films of)
     Battery electrolytes
ΙT
        (lithium battery; vinylidene fluoride-hexafluoropropene
        copolymer-alumina nanoparticle composite films as)
     Ionic conductivity
ΙT
     Porosity
        (of vinylidene fluoride-hexafluoropropene copolymer-alumina
        nanoparticle composite films)
ΙT
     9011-17-0, Vinylidene fluoride-hexafluoropropene copolymer
        (composite with alumina nanoparticles; porosity and ionic conductivity of
        micro-porous films of)
ΙT
     1344-28-1, Alumina, uses
```

(nanoparticles, composites with fluoropolymers; porosity and ionic conductivity of micro-porous films of)

L45 ANSWER 16 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2004:910322 HCAPLUS Full-text

DOCUMENT NUMBER: 142:159306

TITLE: Novel preparation of nanocomposite polymer

electrolyte and its application to lithium polymer

batteries

AUTHOR(S): Qiu, Wei-Li; Ma, Xiao-Hua; Yang, Qing-He; Fu,

Yan-Bao; Zong, Xiang-Fu

CORPORATE SOURCE: Department of Materials Science, Fudan University,

Shanghai, 200433, Peop. Rep. China

SOURCE: Journal of Power Sources (2004), 138(1-2), 245-252

CODEN: JPSODZ; ISSN: 0378-7753

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 01 Nov 2004

Gel nanocomposite polymer electrolyte (NCPE) was prepared by UV polymerization AΒ and thermal polymerization, resp. in the presence of liquid electrolyte with nanosize SiO2-contained poly(ethylene glycol) diacrylate (PEGDA) as the monomer. Nanosize SiO2-contained PEGDA was synthesized using aqueous colloidal silica as one of starting materials and its viscosity was very low. The partial silanol surface groups of SiO2 were modified to an acrylic group by employing of methacryloxypropyl-trimethoxysilane (MAPTMS), which made the dispersion of nanosize SiO2 in PEGDA uniform and stable. Compared with the gel polymer electrolyte (GPE) based on PEGDA without nanosize SiO2, the ionic conductivity of the gel NCPE was higher and the electrochem. stability and interfacial stability were better, whether it was prepared by UV polymerization or thermal polymerization. It showed oxidation stability up to 5.0 V vs. Li/Li+ and lithium deposition/dissoln. on the stainless steel electrode highly reversible. The applicability of the gel NCPE to lithium polymer batteries was demonstrated by graphite/SPE/LiCoO2 cell, which was prepared by in situ thermal polymerization The discharge capacity was stable with charge-discharge cycling.

IT 7631-86-9, Silica, reactions

(colloidal; novel preparation of nanocomposite polymer electrolyte and its application to lithium polymer batteries)

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

0-si-0

IT 24937-79-9, PVDF

(in composite electrode; novel preparation of nanocomposite polymer electrolyte and its application to lithium polymer batteries)

RN 24937-79-9 HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)

CM 1

CRN 75-38-7 CMF C2 H2 F2

CH₂ F-C-F

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 35, 38, 76

TΤ Battery electrolytes

Ceramers

Gels

Ionic conductivity

Nanocomposites

Polymer electrolytes

(novel preparation of nanocomposite polymer electrolyte and its application to lithium polymer batteries)

ΙT 7631-86-9, Silica, reactions

> (colloidal; novel preparation of nanocomposite polymer electrolyte and its application to lithium polymer batteries)

ΙT 24937-79-9, PVDF

(in composite electrode; novel preparation of nanocomposite polymer electrolyte and its application to lithium polymer batteries)

REFERENCE COUNT:

THERE ARE 27 CITED REFERENCES AVAILABLE FOR 27 THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 17 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2004:905472 HCAPLUS Full-text

DOCUMENT NUMBER:

141:382158

TITLE:

Method of fabrication of single ion

conductor-containing composite polymer electrolyte

for lithium secondary battery

INVENTOR(S): Lee, Young Gi; Ryu, Kwang Sun; Chang, Soon Ho PATENT ASSIGNEE(S): Electronics and Telecommunications Research

Institute, S. Korea

SOURCE: U.S. Pat. Appl. Publ., 10 pp.

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	AP	PLICATION NO.	_	DATE		
US 2004214089 US 7211352	A1 B2	20041028 20070501	US	2003-750152		20031230		
KR 2004092189	A	20041103	KR	2003-26420		20030425		
JP 2004327423	A	20041118	JP	2003-435912		20031226		
CN 1610170	Α	20050427	CN	2003-10125473		20031230		
US 2005196677	A1	20050908	US	2005-97730		20050401		
PRIORITY APPLN. INFO.:			KR	2003-26420	A	20030425		
	•		US	2003-750152	A2	20031230		
			KR	2004-28470	A	20040424		

Entered STN: 29 Oct 2004 ED

Provided is a composite polymer electrolyte for a lithium secondary battery AB that includes a composite polymer matrix structure having a single ion conductor-containing polymer matrix to enhance ionic conductivity and a method

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of manufacturing the same. The composite polymer electrolyte includes a first
      polymer matrix made of a first porous polymer with a first pore size; a second
      polymer matrix made of a single ion conductor, an inorg. material, and a
      second porous polymer with a second pore size smaller than the first pore
      size. The second polymer matrix is coated on a surface of the first polymer
      matrix. The composite polymer matrix structure can increase mech. properties.
      The single ion conductor-containing porous polymer matrix of a submicro-scale
      can enhance ionic conductivity and the charge/discharge cycle stability.
     1344-28-1, Alumina, uses 7631-86-9, Silica, uses
     9002-84-0, Ptfe 9002-86-2, Polyvinyl chloride
     9002-88-4, Polyethylene 9003-07-0, Polypropylene
     9004-34-6, Cellulose, uses 9011-17-0,
     Hexafluoropropylene-vinylidene fluoride copolymer 13463-67-7
     , Titania, uses 14807-96-6, Talc, uses 24937-79-9,
     Pvdf 25014-41-9, Polyacrylonitrile 28960-88-5,
     Trifluoroethylene-vinylidene fluoride copolymer
        (method of fabrication of single ion conductor-containing composite
        polymer electrolyte for lithium secondary battery)
RN
     1344-28-1 HCAPLUS
CN
     Aluminum oxide (Al2O3) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
     7631-86-9 HCAPLUS
RN
CN
     Silica (CA INDEX NAME)
 0 = Si = 0
     9002-84-0 HCAPLUS
RN
CN
     Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 116-14-3
     CMF C2 F4
RN
     9002-86-2 HCAPLUS
     Ethene, chloro-, homopolymer (CA INDEX NAME)
CN
    CM
    CRN 75-01-4
    CMF C2 H3 C1
```

36

 $H_2C \longrightarrow CH - C1$

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RN
     9002-88-4 HCAPLUS
CN
     Ethene, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 74-85-1
     CMF C2 H4
 H_2C \longrightarrow CH_2
     9003-07-0 HCAPLUS
RN
CN
     1-Propene, homopolymer (CA INDEX NAME)
     CM
     CRN 115-07-1
     CMF C3 H6
 H3C-CH-CH_2
RN
     9004-34-6 HCAPLUS
CN
    Cellulose (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
   9011-17-0 HCAPLUS
RN
    1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
CN
    (CA INDEX NAME)
    CM
        1
    CRN 116-15-4
    CMF C3 F6
   CF2
F-C-CF3
    CM
         2.
    CRN 75-38-7
    CMF C2 H2 F2
  CH2
```

```
RN
     13463-67-7 HCAPLUS
CN
     Titanium oxide (TiO2) (CA INDEX NAME)
 RN
     14807-96-6 HCAPLUS
CN
     Talc (Mg3H2(SiO3)4) (CA INDEX NAME)
 ●3/4 Mg
     24937-79-9 HCAPLUS
RN
     Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)
CN
     CM
          1
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F_U_F
     25014-41-9 HCAPLUS
RN
     2-Propenenitrile, homopolymer (CA INDEX NAME)
CN
     CM
          1
     CRN 107-13-1
     CMF C3 H3 N
 H_2C \longrightarrow CH - C \longrightarrow N
     28960-88-5 HCAPLUS
RN
     Ethene, 1,1,2-trifluoro-, polymer with 1,1-difluoroethene (CA INDEX
CN
     NAME)
     CM
          1
```

CRN 359-11-5 CMF C2 H F3

F_C__CH_F

CM 2

CRN 75-38-7 CMF C2 H2 F2

CH2 F-C-F

IT 12003-67-7, Aluminum lithium oxide allio2

 $(\gamma$ -form; method of fabrication of single ion conductor-containing composite polymer electrolyte for lithium secondary battery)

RN 12003-67-7 HCAPLUS

CN Aluminate (AlO21-), lithium (1:1) (CA INDEX NAME)

0 = A1 = 0

● Li +

IC ICM H01M010-40

INCL 429309000; X42-931.4; X42-931.6; X42-931.7

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38

IT Battery electrolytes

Composites

Pore size

(method of fabrication of single ion conductor-containing composite polymer electrolyte for lithium secondary battery)

IT 79-41-4D, Methacrylic acid, alkaline metal salt, copolymer ionomer with Me 80-62-6D, Methyl methacrylate, alkaline metal itaconate methacrylate copolymer ionomer 80-62-6D, Methyl methacrylate, alkaline metal maleate 80-62-6D, Methyl methacrylate, alkaline metal copolymer ionomer methacrylate copolymer ionomer 96-47-9, 2-Methyltetrahydrofuran 96-49-1, Ethylene carbonate 96-48-0, γ-Butyrolactone 97-65-4D, Itaconic acid, alkaline metal salt, copolymer ionomer with Me methacrylate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-94-4, Ethyl formate 109-99-9, 110-16-7D, Maleic acid, alkaline metal salt, copolymer ionomer with Me methacrylate 110-71-4 616-38-6, Dimethyl carbonate

623-53-0, Ethyl methyl carbonate 1344-28-1, Alumina, uses **7631-86-9**, Silica, uses 7791-03-9, Lithium perchlorate 9002-84-0, Ptfe 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9003-21-8, Polymethylacrylate 9003-32-1, Polyethylacrylate 9003-42-3, Polyethylmethacrylate 9003-49-0, Polybutylacrylate 9003-63-8, Polybutyl methacrylate 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0 , Hexafluoropropylene-vinylidene fluoride copolymer 13463-67-7 , Titania, uses 14283-07-9, Lithium tetrafluoroborate 14807-96-6, Talc, uses 17347-75-0, Tungsten phosphate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 25013-42-7, Molybdenum phosphate 25014-41-9, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25684-76-8, Tetrafluoroethylene-vinylidene fluoride copolymer 28960-88-5, Trifluoroethylene-vinylidene fluoride copolymer 33454-82-9, Lithium triflate 90076-65-6 (method of fabrication of single ion conductor-containing composite polymer electrolyte for lithium secondary battery) 12003-67-7, Aluminum lithium oxide allio2 $(\gamma$ -form; method of fabrication of single ion conductor-containing composite polymer electrolyte for lithium secondary battery) REFERENCE COUNT: THERE ARE 7 CITED REFERENCES AVAILABLE FOR 7 THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT L45 ANSWER 18 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2004:905471 HCAPLUS Full-text DOCUMENT NUMBER: 141:382157 TITLE: Method of fabrication of composite polymer electrolyte of different morphologies for lithium secondary battery INVENTOR(S): Lee, Young Gi; Kim, Kwang Man; Ryu, Kwang Sun; Chang, Soon Ho PATENT ASSIGNEE(S): S. Korea SOURCE: U.S. Pat. Appl. Publ., 10 pp. CODEN: USXXCO DOCUMENT TYPE: Patent LANGUAGE: English FAMILY ACC. NUM. COUNT: PATENT INFORMATION: PATENT NO. KTND DATE APPLICATION NO DATE 9 5 5

11112111 1101	ICIID	Dill	metalomio.	DAIL
			~~~~	
US 2004214088	A1	20041028	US 2003-748363	20031229
KR 2004092188	A	20041103	KR 2003-26419	20030425
JP 2004327422	A	20041118	JP 2003-431458	20031225
CN 1610169	A	20050427	CN 2003-10125472	20031231
PRIORITY APPLN. INFO.	:		KR 2003-26419	20030425

Entered STN: 29 Oct 2004

IT

AB A composite polymer electrolyte for a lithium secondary battery and a method of manufacturing the same are provided. The composite polymer electrolyte includes a composite film structure which includes a first porous polymer film with good mech. properties and a second porous polymer film with submicroscale morphol. of more compact porous structure than the first porous polymer structure, coated on a surface of the first porous polymer film, and an electrolyte solution impregnated into the composite film structure. The different morphologies of the composite film structure enable to an increase in mech. properties and ionic conductivity Furthermore, the charge/discharge

```
cycle performance and stability of a lithium metal polymer secondary battery
      are enhanced.
     1344-28-1, Alumina, uses 7631-86-9, Silica, uses
ΙT
     9002-84-0, Ptfe 9002-86-2, Polyvinyl chloride
     9002-88-4, Polyethylene 9003-07-0, Polypropylene
     9004-34-6, Cellulose, uses 9011-17-0,
     Hexafluoropropylene-vinylidene fluoride copolymer 12003-67-7
     , Aluminum lithium oxide allio2 13463-67-7, Titania, uses
     14807-96-6, Talc, uses 24937-79-9, Pvdf
     25014-41-9, Polyacrylonitrile 28960-88-5,
     Trifluoroethylene-vinylidene fluoride copolymer
         (method of fabrication of composite polymer electrolyte of
        different morphologies for lithium secondary battery)
     1344-28-1 HCAPLUS
RN
     Aluminum oxide (Al2O3) (CA INDEX NAME)
CN
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
     7631-86-9 HCAPLUS
RN
     Silica (CA INDEX NAME)
CN
 0<u>---</u>Si---0
RN
     9002-84-0 HCAPLUS
CN
     Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 116-14-3
     CMF C2 F4
     9002-86-2 HCAPLUS
RN
     Ethene, chloro-, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 75-01-4
     CMF C2 H3 C1
 H_2C = CH - C1
     9002-88-4 HCAPLUS
RN
CN
     Ethene, homopolymer (CA INDEX NAME)
     CM
          1
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CRN 74-85-1

12003-67-7 HCAPLUS

RN CN

```
CMF C2 H4
 H2C==CH2
RN
     9003-07-0 HCAPLUS
     1-Propene, homopolymer (CA INDEX NAME)
CN
     CM
        1
     CRN 115-07-1
     CMF C3 H6
 H3C-CH \longrightarrow CH2
     9004-34-6 HCAPLUS
RN
CN
     Cellulose (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
    9011-17-0 HCAPLUS
RN
     1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
CN
     (CA INDEX NAME)
    CM
         1
    CRN 116-15-4
    CMF C3 F6
   CF2
F-C-CF3
    CM
         2
    CRN 75-38-7
    CMF C2 H2 F2
   CH2
F-C-F
```

Aluminate (AlO21-), lithium (1:1) (CA INDEX NAME)

0=Al=0 ● Li+ RN 13463-67-7 HCAPLUS CN Titanium oxide (TiO2) (CA INDEX NAME) 14807-96-6 HCAPLUS RN CN Talc (Mg3H2(SiO3)4) (CA INDEX NAME) ●3/4 Mg 24937-79-9 HCAPLUS RN Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME) CN CM 1 CRN 75-38-7 CMF C2 H2 F2 CH2 F-6-F 25014-41-9 HCAPLUS RN CN 2-Propenenitrile, homopolymer (CA INDEX NAME)

CM 1
CRN 107-13-1
CMF C3 H3 N

H 2 C --- C H -- C --- N

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28960-88-5 HCAPLUS
RN
CN
     Ethene, 1,1,2-trifluoro-, polymer with 1,1-difluoroethene (CA INDEX
     NAME)
     CM
          1
     CRN 359-11-5
     CMF C2 H F3
 F- C- CH- F
     CM
          2
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F—C—F
     ICM H01M010-40
INCL 429309000; 429316000; 429317000; 429314000
CC
     52-2 (Electrochemical, Radiational, and Thermal Energy
     Technology)
     Section cross-reference(s): 38
ST
     polymer electrolyte different morphol lithium secondary
     battery
     Secondary batteries
IT
        (lithium; method of fabrication of composite polymer electrolyte of
        different morphologies for lithium secondary battery)
IT
     Battery electrolytes
       Composites
       Polymer morphology
        (method of fabrication of composite polymer electrolyte of
        different morphologies for lithium secondary battery)
IT
     Acrylic polymers, uses
     Fluoropolymers, uses
     Polyamide fibers, uses
     Polyimides, uses
     Polyoxyalkylenes, uses
     Polysulfones, uses
     Polyurethanes, uses
     Zeolites (synthetic), uses
        (method of fabrication of composite polymer electrolyte of
        different morphologies for lithium secondary battery)
     96-47-9, 2-Methyltetrahydrofuran
IT
                                        96-48-0, γ-Butyrolactone
     96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
                                                                 107-31-3,
     Methyl formate 108-32-7, Propylene carbonate
                                                     109-94-4, Ethyl
```

formate 109-99-9, Thf, uses 110-71-4 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7791-03-9, Lithium perchlorate 9002-84-0, Ptfe 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9003-21-8, Polymethyl acrylate 9003-32-1, Polyethyl acrylate 9003-42-3, Polyethyl 9003-49-0, Polybutylacrylate 9003-63-8, methacrylate Polybutylmethacrylate 9004-34-6, Cellulose, uses 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12003-67-7, Aluminum lithium oxide allio2 13463-67-7, Titania, uses 14283-07-9, Lithium tetrafluoroborate 14807-96-6, Talc, uses Lithium hexafluorophosphate 24937-79-9, Pvdf **25014-41-9**, Polyacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 28960-88-5, Trifluoroethylene-vinylidene fluoride copolymer 33454-82-9, Lithium triflate 90076-65-6 (method of fabrication of composite polymer electrolyte of different morphologies for lithium secondary battery) 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses 872-50-4, n-Methylpyrrolidone, uses (method of fabrication of composite polymer electrolyte of different morphologies for lithium secondary battery)

L45 ANSWER 19 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER:

2004:801740 HCAPLUS Full-text

DOCUMENT NUMBER:

141:298722

TITLE:

ΙT

Method for manufacturing batteries

INVENTOR(S):

Aihara, Shigeru; Nishimura, Takashi; Hamano, Hiroshi; Takemura, Daigo; Yoshioka, Shoji; Hiroi,

Osamu; Kuriki, Hironori; Arakane, Atsushi;

Hosokawa, Junichi

PATENT ASSIGNEE(S):

SOURCE:

Mitsubishi Electric Corp., Japan Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004273282	A	20040930	JP 2003-62705	20030310
PRIORITY APPLN. INFO.:			JP 2003-62705	20030310

- Entered STN: 01 Oct 2004 ΕD
- Batteries, having an electrolyte retaining porous polymer-filler layer between a cathode and an anode, are manufactured by preparing a polymer solution containing an acidic filler and a foaming agent, and gasifying the foaming agent.
- ΙT 1344-28-1, Alumina, uses 24937-79-9, Poly(vinylidene fluoride)

(manufacture of secondary lithium batteries with electrolyte retaining porous polymer-acidic filler layers)

- RN 1344-28-1 HCAPLUS
- Aluminum oxide (Al2O3) (CA INDEX NAME) CN
- *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
- 24937-79-9 HCAPLUS RN
- Ethene, 1,1-difluoro-, homopolymer CN (CA INDEX NAME)

CM

TITLE:

1

CRN 75-38-7 CMF C2 H2 F2 CH2 F-C-F ΙT 9002-88-4, Polyethylene (manufacture of secondary lithium batteries with electrolyte retaining porous polymer-acidic filler layers) 9002-88-4 HCAPLUS RN Ethene, homopolymer (CA INDEX NAME) CN CM CRN 74-85-1 CMF C2 H4  $H_2C \longrightarrow CH_2$ IC ICM H01M010-40 ICS H01M002-14; H01M006-02; H01M010-04 52-2 (Electrochemical, Radiational, and Thermal Energy CC Technology) ΙT Secondary batteries (lithium; manufacture of secondary lithium batteries with electrolyte retaining porous polymer-acidic filler layers) ITBattery electrolytes (manufacture of secondary lithium batteries with electrolyte retaining porous polymer-acidic filler layers) ITFluoropolymers, uses (manufacture of secondary lithium batteries with electrolyte retaining porous polymer-acidic filler layers) 124-38-9, Carbon dioxide, uses IT872-50-4, NMP, uses (in manufacture of secondary lithium batteries with electrolyte retaining porous polymer-acidic filler layers) ΙT 1344-28-1, Alumina, uses 24937-79-9, Poly(vinylidene fluoride) (manufacture of secondary lithium batteries with electrolyte retaining porous polymer-acidic filler layers) ΙT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 9002-88-4, Polyethylene 21324-40-3, Lithium hexafluorophosphate (manufacture of secondary lithium batteries with electrolyte retaining porous polymer-acidic filler layers) L45 ANSWER 20 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN 2004:99706 HCAPLUS Full-text ACCESSION NUMBER: DOCUMENT NUMBER: 141:9503

Preparation and Characterization of Asymmetric

Composite Polymer Electrolytes for Lithium Metal

Polymer Batteries

AUTHOR(S):

Lee, Young-Gi; Ryu, Kwang Sun

CORPORATE SOURCE:

Power Source Device Team, Electronics and

Telecommunications Research Institute, Daejeon,

305-350, S. Korea

SOURCE:

Polymer Bulletin (Heidelberg, Germany) (2004),

51(4), 315-320

CODEN: POBUDR; ISSN: 0170-0839

PUBLISHER: Springer-Verlag

DOCUMENT TYPE: Journal LANGUAGE: English

ED Entered STN: 08 Feb 2004

AB An asym. composite polymer electrolyte composed of a micro- porous polyethylene support with a composite submicro- porous layer is described. An ethylene carbonate/dimethyl carbonate/LiPF6 solution fills the pores of the composite. The maximum ionic conductivity of this system was 7.0 + 10-3 S/cm at ambient temperature The conductivity is affected by the amount of liquid electrolyte in the matrix.

ΙT 9011-17-0

> (composite with silica; in preparation and characterization of asym. composite polymer electrolytes for lithium polymer batteries)

RN 9011-17-0 HCAPLUS

1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene CN (CA INDEX NAME)

CM 1

CRN 116-15-4 CMF C3 F6

CF2 F-C-CF3

> CM 2

CRN 75-38-7 CMF C2 H2 F2

CH₂ F_ C_ F

ΙT 7631-86-9D, Silica, silanized

> (fumed, composite with hexafluoropropylene-vinylidene difluoride copolymer; in preparation and characterization of asym. composite polymer electrolytes for lithium polymer batteries)

RN 7631-86-9 HCAPLUS

CNSilica (CA INDEX NAME) 

```
ΙT
     9002-88-4, Polyethylene
        (preparation and characterization of asym. composite polymer
        electrolytes supported on polyethylene for lithium batteries)
RN
     9002-88-4 HCAPLUS
CN
     Ethene, homopolymer (CA INDEX NAME)
     CM
     CRN
         74-85-1
     CMF C2 H4
 H2C=CH2
CC
     52-2 (Electrochemical, Radiational, and Thermal Energy
     Technology)
     Section cross-reference(s): 38
ΙT
     Battery electrolytes
       Composites
     Polymer electrolytes
        (preparation and characterization of asym. composite polymer
        electrolytes for lithium polymer batteries)
ΙT
     9011-17-0
        (composite with silica; in preparation and characterization of asym.
        composite polymer electrolytes for lithium polymer batteries)
IT
     7631-86-9D, Silica, silanized
        (fumed, composite with hexafluoropropylene-vinylidene difluoride
        copolymer; in preparation and characterization of asym. composite
        polymer electrolytes for lithium polymer batteries)
     9002-88-4, Polyethylene
IT
        (preparation and characterization of asym. composite polymer
        electrolytes supported on polyethylene for lithium batteries)
REFERENCE COUNT:
                         19
                               THERE ARE 19 CITED REFERENCES AVAILABLE FOR
                               THIS RECORD. ALL CITATIONS AVAILABLE IN THE
                               RE FORMAT
L45 ANSWER 21 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN
                         2003:994044 HCAPLUS Full-text
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         140:256169
TITLE:
                         Experimental investigations on PVC-LiCF3SO3-SiO2
                         composite polymer electrolytes
                         Subban, R. H. Y.; Arof, A. K.
AUTHOR(S):
CORPORATE SOURCE:
                         Faculty of Applied Science, MARA University of
                         Technology, Selangor, 40500, Malay.
SOURCE:
                         Journal of New Materials for Electrochemical
                         Systems (2003), 6(3), 197-203
                         CODEN: JMESFQ; ISSN: 1480-2422
                         Journal of New Materials for Electrochemical
PUBLISHER:
                         Systems
DOCUMENT TYPE:
                         Journal
LANGUAGE:
                         English
ED
     Entered STN: 22 Dec 2003
```

AΒ The preparation and characterization of composite polymer electrolytes based on polyvinyl chloride (PVC) with lithium trifluoromethanesulfonate (LiCF3SO3) as doping salt for different concns. of silicon dioxide (SiO2) as the inorg. filler were studied. FTIR and x-ray diffraction studies show that complexation has taken place mainly in the crystalline phase. The effect of inorg. filler on the elec. conductivity of the composite polymer electrolytes were studied as a function of SiO2 content and temperature The prepared films were also subjected to thermal anal. and the results presented and discussed. ΙT 7631-86-9, Fumed silica, uses (colloidal, complexes with PVC and LiCF3SO3; phys. property exptl. investigations on PVC-LiCF3SO3-SiO2 composite polymer electrolytes) RN 7631-86-9 HCAPLUS CN Silica (CA INDEX NAME) IT 9002-86-2, Polyvinyl chloride (complexes with silica and LiCF3SO3; phys. property exptl. investigations on PVC-LiCF3SO3-SiO2 composite polymer electrolytes) 9002-86-2 HCAPLUS RN CN Ethene, chloro-, homopolymer (CA INDEX NAME) CM 1 CRN 75-01-4 CMF C2 H3 C1  $H2C \longrightarrow CH - C1$ CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38 ΙT Battery electrolytes Complexation Composites Electric conductivity Electric impedance Fillers Polymer electrolytes (phys. property exptl. investigations on PVC-LiCF3SO3-SiO2 composite polymer electrolytes) ΙT **7631-86-9**, Fumed silica, uses (colloidal, complexes with PVC and LiCF3SO3; phys. property exptl. investigations on PVC-LiCF3SO3-SiO2 composite polymer electrolytes) ΙT 9002-86-2, Polyvinyl chloride (complexes with silica and LiCF3SO3; phys. property exptl. investigations on PVC-LiCF3SO3-SiO2 composite polymer electrolytes) REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT L45 ANSWER 22 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN

2003:471041 HCAPLUS <u>Full-text</u>

ACCESSION NUMBER:

DOCUMENT NUMBER: 139:24138

TITLE: Secondary nonaqueous electrolyte battery

INVENTOR(S):
Saito, Satoshi

PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003173769	A	20030620	JP 2001-371510	20011205
PRIORITY APPLN. INFO.:			JP 2001-371510	20011205

ED Entered STN: 20 Jun 2003

The battery has a nonaq. electrolyte between an active mass containing anode mixture layer and an active mass containing cathode mixture layer; where the electrolyte is made of an electrolyte solution contained porous polymer film; and the anode mixture layer and/or the cathode mixture layer contains an inorg. solid electrolyte powder.

IT 7631-86-9, Silica, uses

(electrodes containing inorg. solid electrolyte powders for secondary lithium batteries)

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (CA INDEX NAME)

CM 1

CRN 116-15-4 CMF C3 F6

CF2 || F-C-CF3

CM 2

CRN 75-38-7 CMF C2 H2 F2 CH₂

IC ICM H01M004-02

ICS H01M002-16; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery nonaq electrolyte porous polymer film; inorg solid electrolyte powder electrode secondary battery

IT Secondary batteries

(electrolytes and electrodes containing porous polymers and inorg. solid electrolytes resp. for secondary lithium batteries)

IT Battery electrolytes

(nonaq. electrolytes containing porous polymer films
for secondary lithium batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate (nonaq. electrolytes containing porous polymer films for secondary lithium batteries)

L45 ANSWER 23 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2003:94595 HCAPLUS <u>Full-text</u>

DOCUMENT NUMBER: 138:156242

TITLE: Sealed lead storage battery having gel electrolyte

INVENTOR(S): Kano, Tetsuya; Noguchi, Hiromasa PATENT ASSIGNEE(S): Furukawa Battery Co., Ltd., Japan Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003036831	Α	20030207	JP 2001-220885	20010723
PRIORITY APPLN. INFO.:			JP 2001-220885	20010723

ED Entered STN: 07 Feb 2003

The battery has an integrated or laminated separator, containing a  $\geq 0.5$  mm thick mat of synthetic resin fiber or long glass fiber having diameter 10-25  $\mu$ m, and a  $\leq 0.5$  mm thick porous sheet having maximum pore size  $\leq 50$   $\mu$ m and average pore size  $\geq 2$   $\mu$ m and containing  $\leq 15$  % SiO2; and a gel electrolyte, made of a dilute sulfuric acid, containing a small-quantity soluble sulfate, 0.75-4 or 1-3 % phosphoric acid and  $\leq 8$  % fine silica particles, and filling the separator hole or the space inside the battery around an electrode-separator stack, containing the separator between an anode and a cathode; where the cathode is pressure welded with the separator mat.

IT 9002-88-4, Polyethylene

(hydrophilic, porous sheet separator; secondary lead-acid batteries containing thickness and pore size controlled separators and phosphoric acid and silica amount controlled gel electrolytes)

RN 9002-88-4 HCAPLUS

CN Ethene, homopolymer (CA INDEX NAME)

CM 1

CRN 74-85-1 CMF C2 H4

 $H_2C \longrightarrow CH_2$ 

IT 7631-86-9, Silica, uses

(secondary lead-acid batteries containing thickness and pore size controlled separators and phosphoric acid and silica amount controlled gel electrolytes)

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

IC ICM H01M002-16

ICS H01M002-16; H01M002-18; H01M010-08; H01M010-10; H01M010-12

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Battery electrolytes

(gel electrolytes containing phosphoric acid and silica with controlled amount for secondary lead-acid batteries)

IT Secondary battery separators

(separators containing mats and porous sheets with controlled thickness and pore size for secondary lead-acid batteries)

IT 9002-88-4, Polyethylene

(hydrophilic, porous sheet separator; secondary lead-acid batteries containing thickness and pore size controlled separators and phosphoric acid and silica amount controlled gel electrolytes)

IT 7631-86-9, Silica, uses

(secondary lead-acid batteries containing thickness and pore size controlled separators and phosphoric acid and silica amount controlled gel electrolytes)

L45 ANSWER 24 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:

2002:811781 HCAPLUS <u>Full-text</u>

DOCUMENT NUMBER:

137:327379

TITLE:

Continuous production of trilaminates by coextrusion for polymer lithium batteries

INVENTOR(S):

Naarmann, Herbert; Kruger, Franz Josef; Schaefer,

Tim

PATENT ASSIGNEE(S):

Dilo Trading A.-G., Switz.

SOURCE:

Ger. Offen., 10 pp.

CODEN: GWXXBX

DOCUMENT TYPE:

Patent

LANGUAGE:

m 1

FAMILY ACC. NUM. COUNT:

German

PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO. DATE

DE 10118639 A1 20021024 DE 2001-10118639 20010412

DE 10118639 B4 20070614

DE 2001-10118639

20010412

PRIORITY APPLN. INFO.:

ΕD Entered STN: 25 Oct 2002 AΒ The invention concerns the production of Trilamainates, consisting of an anode composite, polymer electrolytes and a cathode composite, which are provided on the cathode side and on the anode side with a metallic grid. The production is carried out continuously, preferably via coextrusion. The systems thus obtained form the basis for rechargeable polymer lithium batteries. The procedure according to invention contains the production of anode masses, cathode material as well as the polymer gel electrolyte, which are: (1) homogeneously developed, (2) agree in structural viscosity and rheol., and (3) defined in shape by extrusion; and can be continuously formed as bands with reproducible wts. and laminated. The anode mass consists of graphite, preferably synthetic, e.g., mesocarbon microbeads with spherical particles or graphite fibers as well as a polymer binder e.g. polyfluoroelastomeres, polyolefins, polybutadiene or styrene copolymers, as well as polymethacrylates with alc. residues C4-C20, and polyvinyl compds. such as polyvinylpyrrolidone, polyvinylimidazole, polyvinylpyridin etc. and their copolymers, e.g. with

IT 7631-86-9, Silica, uses 9011-17-0, Kynar 2801

LiPF6 or Li oxalato borates, etc.

(continuous production of trilaminates by coextrusion for polymer lithium batteries)

methacrylic acid ester with alc. residues C4-C20, and a conducting salt e.g.,

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (CA INDEX NAME)

CM 1

CRN 116-15-4 CMF C3 F6

CF2 || F-C-CF3 CM 2

CRN 75-38-7 CMF C2 H2 F2

CH2 F-C-F

IC ICM H01M010-38 ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

IT Battery anodes

Battery cathodes
Extrusion of plastics and rubbers

Laminated materials

(continuous production of trilaminates by coextrusion for polymer lithium batteries)

IT Battery electrolytes

(polymer gel; continuous production of trilaminates by coextrusion for polymer lithium batteries)

IT 7631-86-9, Silica, uses 9011-17-0, Kynar 2801

(continuous production of trilaminates by coextrusion for polymer lithium batteries)

REFERENCE COUNT: 1

THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 25 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2002:635135 HCAPLUS Full-text

DOCUMENT NUMBER: 138:58808

TITLE: Effect of inorganics on polymer electrolytes for

lithium batteries

AUTHOR(S): Bai, Ying; Wu, Feng; Ren, Xu-mei

CORPORATE SOURCE: School of Chemical Engineering and Materials

Science, Beijing Institute of Technology, National Development Center for Hi-Tech Green Materials,

Beijing, 100081, Peop. Rep. China Dianchi (2002), 32(Suppl.), 56-57 CODEN: DNCHEP; ISSN: 1001-1579

PUBLISHER: Dianchi Zazhishe

DOCUMENT TYPE: Journal LANGUAGE: Chinese ED Entered STN: 22 Aug 2002

On the basis of the preparation of the PVDF-HFP porous films by a phase-inversion method, the composite polymer electrolyte membranes with SiO2 or zeolite additive were prepared, which could be used in the secondary lithium batteries. The film morphologies and the charge-discharge features were characterized with SEM and electrochem. test, resp. The anal. of the n-BuOH uptakes showed that the composite polymer films had higher porosities and

could meet the demands of the lithium secondary batteries. IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer

(effect of inorgs. on polymer electrolytes for lithium batteries)

RN 9011-17-0 HCAPLUS

SOURCE:

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (CA INDEX NAME)

```
CM
          1
     CRN 116-15-4
     CMF C3 F6
    CF2
 F-C-CF3
     CM
          2
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F-C-F
ΙT
     7631-86-9, Silica, uses
        (effect of inorgs. on polymer electrolytes for lithium batteries)
     7631-86-9 HCAPLUS
RN
CN
     Silica (CA INDEX NAME)
 52-2 (Electrochemical, Radiational, and Thermal Energy
CC
     Technology)
     Section cross-reference(s): 38
ΙT
     Battery electrolytes
     Polymer electrolytes
        (effect of inorgs. on polymer electrolytes for lithium batteries)
IT
     9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
        (effect of inorgs. on polymer electrolytes for lithium batteries)
IT
     7631-86-9, Silica, uses
        (effect of inorgs. on polymer electrolytes for lithium batteries)
L45 ANSWER 26 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN
                         2002:635132 HCAPLUS Full-text
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         138:58806
TITLE:
                         Preparation of a composite polymer electrolyte for
                         Li-ion batteries
AUTHOR(S):
                         Ai, Xin-ping; Yuan, Li-xia; Yan, Hai-jun; Yang,
                         Han-xi
CORPORATE SOURCE:
                         College of Chemistry and Molecular Science, Wuhan
                         University, Wuhan, Hubei, 430072, Peop. Rep. China
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Dianchi (2002), 32(Suppl.), 50-52 CODEN: DNCHEP; ISSN: 1001-1579

SOURCE:

10/748,363 PUBLISHER: Dianchi Zazhishe DOCUMENT TYPE: Journal LANGUAGE: Chinese ED Entered STN: 22 Aug 2002 The composite polymer electrolyte was prepared by casting a layer of PVDF-AB based polymer electrolyte on a porous polypropane substrate and its structural and electrochem. properties were characterized by SEM and impedance measurements. In comparison with conventional plasticized polymer electrolyte, this composite polymer electrolyte exhibited not only enhanced mech. strength and dimensional stability, but also showed higher ionic conductivity, facilitating for practical applications for polymer lithium ion batteries. ΙT 24937-79-9, Pvdf (preparation of composite polymer electrolyte for Li-ion batteries) RN 24937-79-9 HCAPLUS CN Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME) CM 1 CRN 75-38-7 CMF C2 H2 F2 CH₂ F-C-F ΙT 7631-86-9, Silica, uses (preparation of composite polymer electrolyte for Li-ion batteries) 7631-86-9 HCAPLUS RN Silica (CA INDEX NAME) CN 0 = Si = 0CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38 ΙT Battery electrolytes Polymer electrolytes (preparation of composite polymer electrolyte for Li-ion batteries) IΤ 24937-79-9, Pvdf (preparation of composite polymer electrolyte for Li-ion batteries) IT 7631-86-9, Silica, uses (preparation of composite polymer electrolyte for Li-ion batteries) L45 ANSWER 27 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2002:595200 HCAPLUS Full-text DOCUMENT NUMBER: 137:143066 A multi-layered, UV-cured polymer TITLE: electrolyte for lithium secondary battery

Yong-Tae

Yun, Kyung-Suk; Cho, Byung-Won; Cho, Won-Il; Kim,

Hyung-Sun; Kim, Un-Sek; Rhee, Hee-Woo; Kim,

Korea Institute of Science and Technology, S.

INVENTOR(S):

PATENT ASSIGNEE(S):

Korea

SOURCE: PCT Int. Appl., 40 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002061874 W: JP, KR, US	A1	20020808	WO 2001-KR133	20010131
US 2003180623 US 7135254	A1 B2	20030925 20061114	US 2003-275383	20030522
PRIORITY APPLN. INFO.:	DZ	20001114	WO 2001-KR133	W 20010131

ED Entered STN: 09 Aug 2002

The present invention relates to a multi-layered, UV-cured polymer electrolyte and lithium secondary battery comprising the same, wherein the polymer electrolyte comprises: (A) a separator layer formed of polymer electrolyte, PP, PE, PVdF or non-woven fabric, wherein the separator layer having two surfaces; (B) at least one gelled polymer electrolyte layer located on at least one surface of the separator layer comprising: (a) polymer obtained by curing ethyleneglycoldi(meth)acrylate oligomer of the formula by UV irradiation: CH2=CR1COO(CH2CH2O)nCOCR2=CH2 wherein, R1 and R2 are independently hydrogen or Me group, and n is a integer of 3-20; and (b) at least one polymer selected from the group consisting of PVdF-based polymer, PAN-based polymer, PMMA-based polymer and PVC-based polymer; and (C) organic electrolyte solution in which lithium salt is dissolved in a solvent.

IT 9002-86-2, Polyvinyl chloride 9002-88-4,

Polyethylene 9003-07-0, Polypropylene 9011-17-0,

Kynar 2801 24937-79-9, Pvdf 25014-41-9,

Polvacrvlonitrile

(multilayered, UV-cured polymer electrolyte for lithium secondary battery)

RN 9002-86-2 HCAPLUS

CN Ethene, chloro-, homopolymer (CA INDEX NAME)

CM 1

CRN 75-01-4 CMF C2 H3 C1

 $H_2C \longrightarrow CH - C1$ 

RN 9002-88-4 HCAPLUS

CN Ethene, homopolymer (CA INDEX NAME)

CM 1

CRN 74-85-1 CMF C2 H4

H2C==CH2

```
RN
     9003-07-0 HCAPLUS
CN
     1-Propene, homopolymer (CA INDEX NAME)
     CM
           1
     CRN 115-07-1
     CMF C3 H6
 H3C-CH \longrightarrow CH2
RN
     9011-17-0 HCAPLUS
     1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
     (CA INDEX NAME)
     CM
          1
     CRN 116-15-4
     CMF C3 F6
   CF2
 F-C-CF3
     CM
          2
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F-C-F
     24937-79-9 HCAPLUS
RN
CN
     Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)
     CM
     CRN 75-38-7
     CMF C2 H2 F2
   CH<sub>2</sub>
```

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25014-41-9 HCAPLUS
RN
CN
     2-Propenenitrile, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 107-13-1
     CMF C3 H3 N
 H 2 C === C H -- C === N
     1344-28-1, Alumina, uses 7631-86-9, Silica, uses
ΙT
     9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide
     allio2 13463-67-7, Titania, uses
        (porous filler; multilayered, UV-cured polymer
        electrolyte for lithium secondary battery)
     1344-28-1 HCAPLUS
RN
CN
     Aluminum oxide (Al2O3) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
    7631-86-9 HCAPLUS
RN
     Silica (CA INDEX NAME)
CN
 0-Si-0
     9002-84-0 HCAPLUS
RN
     Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME)
CN
     СМ
          1
     CRN 116-14-3
     CMF C2 F4
     12003-67-7 HCAPLUS
RN
ÇN
     Aluminate (AlO21-), lithium (1:1) (CA INDEX NAME)
 0== A1== O
  Li+
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13463-67-7 HCAPLUS
RN
     Titanium oxide (TiO2) (CA INDEX NAME)
CN
 0 = Ti = 0
IC
     ICM H01M010-40
CC
     52-2 (Electrochemical, Radiational, and Thermal Energy
     Technology)
     Section cross-reference(s): 38
IT
     Secondary batteries
        (lithium; multilayered, UV-cured polymer electrolyte for
        lithium secondary battery)
IT
     Battery electrolytes
     Polymer electrolytes
        (multilayered, UV-cured polymer electrolyte for lithium
        secondary battery)
ΙT
     Coke
     Fluoropolymers, uses
     Polymer blends
        (multilayered, UV-cured polymer electrolyte for lithium
        secondary battery)
ΙT
     Crosslinking
        (photochem.; multilayered, UV-cured polymer electrolyte
        for lithium secondary battery)
IT
     Fluoropolymers, uses
     Polymers, uses
        (porous filler; multilayered, UV-cured polymer
        electrolyte for lithium secondary battery)
ΙT
     Lithium alloy, base
        (multilayered, UV-cured polymer electrolyte for lithium
        secondary battery)
IΤ
     102-71-6, Triethanolamine, uses
                                        102-82-9, Tributylamine
                                                                 103-83-3,
     n-Benzyldimethylamine
                            121-44-8, Triethylamine, uses
        (UV curing accelerator; multilayered, UV-cured polymer
        electrolyte for lithium secondary battery)
ΙT
     84-51-5, 2-EthylAnthraguinone
                                      84-65-1, Anthraguinone
                                                               93-97-0,
     Benzoyl benzoate 119-61-9, Benzophenone, uses 120-51-4, Benzyl
     benzoate
               131-09-9, 2-ChloroAnthraquinone 492-22-8, Thioxanthone
     574-09-4, Ethyl benzoin ether
                                     947-19-3, 1-Hydroxycyclohexyl phenyl
              2648-61-5
                         3524-62-7 5293-97-0, 2,2'-Dichlorobenzophenone
     6175-45-7, 2,2-Diethoxyacetophenone
                                          6652-28-4, Isopropyl benzoin
     ether 6652-29-5, Benzoin phenyl ether 7473-98-5, 2-Hydroxy-2-methyl-1-phenylpropane-1-one 7624-24-0
                                                             7727-54-0.
                           24650-42-8, 2,2-Dimethoxy-2-phenylacetophenone
     Ammonium persulfate
     72896-34-5, Chlorothioxanthone 75081-21-9, Isopropyl thioxanthone
        (UV curing initiator; multilayered, UV-cured polymer
        electrolyte for lithium secondary battery)
     7440-44-0, Carbon, uses
TΤ
        (hard; multilayered, UV-cured polymer electrolyte for
        lithium secondary battery)
     68-12-2, Dmf, uses 75-05-8, Acetonitrile, uses 79-20-9, Methyl
ΙT
             96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate
     105-37-3, Ethyl propionate 105-58-8, Diethyl carbonate
     Propylene carbonate 109-99-9, Thf, uses
                                                110-71-4,
```

1,2-Dimethoxyethane 127-19-5, Dimethyl acetamide 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1314-62-1, Vanadium pentoxide, uses 1332-29-2, Tin oxide 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9003-00-3, Acrylonitrile-vinyl chloride copolymer 9003-07-0, Polypropylene 9010-88-2, Ethyl acrylate-methyl methacrylate copolymer 9011-14-7, Pmma **9011-17-0**, Kynar 2801 9056-77-3, Poly(ethylene glycol methacrylate) 12031-65-1, Lithium nickel oxide linio2 Vanadium oxide v6o13 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Pvdf 24968-79-4, Acrylonitrile-methylacrylate copolymer 25014-41-9, Polyacrylonitrile 25086-15-1, Methacrylic acid-methyl methacrylate copolymer 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 162004-08-2, Cobalt lithium nickel oxide colinio2

(multilayered, UV-cured polymer electrolyte for lithium secondary battery)

1304-28-5, Baria, uses 1309-48-4, Magnesia, uses ΙΤ 554-13-2 1310-65-2, Lithium hydroxide (Li(OH)) 1313-59-3, Sodium oxide, uses 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses 9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide allio2 12047-27-7, Barium titanium oxide batio3, uses 12057-24-8, Lithia, uses 13463-67-7, Titania, uses 26134-62-3, Lithium nitride (Li3N) (porous filler; multilayered, UV-cured polymer

electrolyte for lithium secondary battery) THERE ARE 7 CITED REFERENCES AVAILABLE FOR REFERENCE COUNT: 7 THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 28 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN 2002:104921 HCAPLUS Full-text

DOCUMENT NUMBER: 136:153908

TITLE: Secondary polymer electrolyte lithium battery

INVENTOR(S): Morikawa, Takamoto; Eda, Nobuo

Matsushita Electric Industrial Co., Ltd., Japan PATENT ASSIGNEE(S):

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

ACCESSION NUMBER:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002042872 PRIORITY APPLN. INFO.:	A	20020208	JP 2000-230576 JP 2000-230576	20000731 20000731

Entered STN: 08 Feb 2002 ED

The battery has a polymer gel electrolyte containing a polyacrylonitrile anode AB side film, which becomes a gel when absorbed a nonaq. electrolyte solution, and a microporous polyolefin cathode side. The polyacrylonitrile film may contain powdered SiO2 or Al2O3 inorg. filler.

1344-28-1, Alumina, uses 7631-86-9, Silica, uses ΙT (additives in electrolytes containing gelled acrylonitrile polymer layer and porous polyolefin layer for

```
secondary lithium batteries)
RN
     1344-28-1 HCAPLUS
CN
     Aluminum oxide (Al2O3) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN
     7631-86-9 HCAPLUS
CN
     Silica (CA INDEX NAME)
 ΙT
     9002-88-4, Polyethylene
        (laminated polymer electrolytes containing porous
        polyolefin cathode side for secondary lithium batteries)
RN
     9002-88-4 HCAPLUS
     Ethene, homopolymer (CA INDEX NAME)
CN
     CM
     CRN 74-85-1
     CMF C2 H4
 H2C-CH2
IC
     ICM H01M010-40
     52-2 (Electrochemical, Radiational, and Thermal Energy
CC
     Technology)
ST
     secondary lithium battery laminated gel polymer electrolyte;
     polyacrylonitrile polyolefin gel electrolyte laminate
     lithium battery
ΙT
     Battery electrolytes
        (electrolytes containing gelled acrylonitrile polymer layer
        and porous polyolefin layer for secondary
        lithium batteries)
     Polyolefins
IT
        (laminated polymer electrolytes containing porous
        polyolefin cathode side for secondary lithium batteries)
     1344-28-1, Alumina, uses 7631-86-9, Silica, uses
ΙT
        (additives in electrolytes containing gelled acrylonitrile polymer
        layer and porous polyolefin layer for
        secondary lithium batteries)
IT
     1310-65-2, Lithium hydroxide
        (electrolytes containing gelled acrylonitrile polymer layer
        and porous polyolefin layer for secondary
        lithium batteries)
     25749-57-9, Acrylonitrile-methacrylic acid copolymer
TΤ
        (laminated polymer electrolytes containing gelled
        acrylonitrile polymer anode side for secondary lithium batteries)
IT
     9002-88-4, Polyethylene
        (laminated polymer electrolytes containing porous
        polyolefin cathode side for secondary lithium batteries)
L45 ANSWER 29 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN
```

ACCESSION NUMBER: 2002:27745 HCAPLUS Full-text

DOCUMENT NUMBER: 136:72343

TITLE: Nanoparticle composite polymer electrolyte and

secondary lithium battery using it

INVENTOR(S): Mishima, Ryoji

PATENT ASSIGNEE(S): Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002008724	А	20020111	JP 2000-229960	20000623
PRIORITY APPLN. INFO.:			JP 2000-229960	20000623

ED Entered STN: 11 Jan 2002

Claimed battery is equipped with a composite polymer electrolyte containing an AB inorg. nanoparticle. Preferably, the battery uses a composite gel polymer containing an electrolyte solution impregnated in a polymer obtained by polymerizing or crosslinking a mixture containing a powdery or liquid monomer or oligomer and ≤100 nm-diameter inorg. nanoparticles. The polymer electrolyte has high strength at high temperature and low shrinkage at low temperature

25014-41-9, Polyacrylonitrile IT

> (composites with alumina; nanoparticle composite gel polymer electrolyte for secondary lithium battery)

RN 25014-41-9 HCAPLUS

CN 2-Propenenitrile, homopolymer (CA INDEX NAME)

CM 1

CRN 107-13-1 CMF C3 H3 N

H 2 C --- C H -- C --- N

ΙT 1344-28-1, Alumina, uses

> (composites with polyacrylonitrile; nanoparticle composite gel polymer electrolyte for secondary lithium battery)

1344-28-1 HCAPLUS RN

Aluminum oxide (Al2O3) (CA INDEX NAME) CN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

ICM H01M010-40 IC

52-2 (Electrochemical, Radiational, and Thermal Energy Technology) CC

ΙT Battery electrolytes

Nanocomposites

Nanoparticles

Polymer electrolytes

(nanoparticle composite gel polymer electrolyte for secondary lithium battery)

ΙT 25014-41-9, Polyacrylonitrile

(composites with alumina; nanoparticle composite gel polymer

electrolyte for secondary lithium battery)

IT 1344-28-1, Alumina, uses

(composites with polyacrylonitrile; nanoparticle composite gel polymer electrolyte for secondary lithium battery)

L45 ANSWER 30 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:

2001:935958 HCAPLUS Full-text

DOCUMENT NUMBER:

136:56445

TITLE:

Methods for preparation of microporous solid

electrolytes for rechargeable batteries

INVENTOR(S):

Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun

PATENT ASSIGNEE(S):

Finecell Co., Ltd., S. Korea

SOURCE:

PCT Int. Appl., 45 pp.

DOCUMENT TYPE:

CODEN: PIXXD2

LANGUAGE:

Patent English

LANGUAGE:

Engl.

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001099220	A1	20011227	WO 2000-KR482	20000524
W: CN, JP, KR,	US			
RW: AT, BE, CH,	CY, DE	, DK, ES, FI	, FR, GB, GR, IE,	IT, LU, MC,
NL, PT, SE				
EP 1290749	A1	20030312	EP 2000-927894	20000524
R: AT, BE, CH,	DE, DK	, ES, FR, GB	, GR, IT, LI, LU,	NL, SE, MC,
PT, IE, FI,	CY			
JP 2003536233	T	20031202	JP 2002-503968	20000524
PRIORITY APPLN. INFO.:			WO 2000-KR482	W 20000524

ED Entered STN: 28 Dec 2001

The present invention is directed to an electrolyte film and/or a solid electrolyte, having a microporous structure, for a rechargeable cell. According to the present invention, when preparing the electrolyte film and/or the solid electrolyte, an inorg. absorbent is added in the amount of more than 70% by weight in a polymer matrix to prevent the porous structure from being destructed at the cell-assembling process such as lamination or pressing, whereby the absorbing power of a liquid electrolyte to the solid electrolyte film and the ionic conductivity can be maintained. The inorg. absorbent contained over the specific amount, together with the microporous structure, improves the capacity of absorbing the liquid electrolyte and, in particular, works as a structure element of increasing the mech. strength of electrolyte film and/or solid electrolyte. Therefore, the good ionic conductivity can be maintained even after the assembly of cell.

IT 9002-86-2, Polyvinyl chloride 9002-88-4,

Polyethylene 9003-07-0, Polypropylene 9011-17-0,

Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9

, Polyvinylidene fluoride 25014-41-9, Polyacrylonitrile

(methods for preparation of microporous solid electrolytes for rechargeable batteries)

RN 9002-86-2 HCAPLUS

CN Ethene, chloro-, homopolymer (CA INDEX NAME)

CM 1

CRN 75-01-4 CMF C2 H3 C1  $H_2C \longrightarrow CH - C1$ 

```
RN 9002-88-4 HCAPLUS
CN Ethene, homopolymer (CA INDEX NAME)

CM 1

CRN 74-85-1

CMF C2 H4
```

RN 9003-07-0 HCAPLUS
CN 1-Propene, homopolymer (CA INDEX NAME)

CM 1

CRN 115-07-1

CMF C3 H6

H3C-CH-CH2

```
RN 9011-17-0 HCAPLUS
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (CA INDEX NAME)

CM 1

CRN 116-15-4

CMF C3 F6
```

CF2 || F-C-CF3

CM 2
CRN 75-38-7
CMF C2 H2 F2

CH₂ F_U_F

```
24937-79-9 HCAPLUS
RN
     Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)
CN
     CM
          1
     CRN 75-38-7
     CMF C2 H2 F2
   CH<sub>2</sub>
 F-C-F
     25014-41-9 HCAPLUS
RN
CN
     2-Propenenitrile, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 107-13-1
     CMF C3 H3 N
 H 2 C --- C H-- C --- N
ΙT
     1344-28-1, Alumina, uses 7631-86-9, Silica, uses
        (porous; methods for preparation of microporous solid
        electrolytes for rechargeable batteries)
RN , 1344-28-1 HCAPLUS
     Aluminum oxide (Al2O3) (CA INDEX NAME)
CN
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN
    7631-86-9 HCAPLUS
CN
     Silica (CA INDEX NAME)
 0=== S i === 0
TC
     ICM H01M010-38
     52-2 (Electrochemical, Radiational, and Thermal Energy
CC
     Technology)
     Section cross-reference(s): 38
ΙT
     Battery electrolytes
     Ionic conductivity
     Secondary batteries
        (methods for preparation of microporous solid electrolytes for
        rechargeable batteries)
ΙT
     67-63-0, Isopropanol, uses 79-41-4D, Methacrylic acid, esters,
                1309-48-4, Magnesium oxide, uses 1318-93-0,
```

Montmorillonite, uses 9002-86-2, Polyvinyl chloride 9002-88-4, Polyethylene 9002-89-5, Polyvinyl alcohol

9002-93-1, Triton x 100 9003-07-0, Polypropylene

9003-27-4, Polyisobutylene 9003-29-6, Polybutylene 9011-14-7, Pmma

9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer

9012-09-3, Cellulose triacetate 12026-53-8, Paragonite 17831-71-9.

Tetraethylene glycol diacrylate 24937-79-9, Polyvinylidene

fluoride 25014-41-9, Polyacrylonitrile 25322-68-3, Peo

31900-57-9, Polydimethylsiloxane 114481-92-4, Maleic

anhydride-vinylidene fluoride copolymer

(methods for preparation of microporous solid electrolytes for rechargeable batteries)

ΤТ 1344-28-1, Alumina, uses 7631-86-9, Silica, uses

5

(porous; methods for preparation of microporous solid

electrolytes for rechargeable batteries)

REFERENCE COUNT:

THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 31 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2001:868873 HCAPLUS Full-text

DOCUMENT NUMBER:

136:9101

TITLE:

Fabrication method for lithium secondary battery

with polymer electrolyte prepared by spray method

INVENTOR(S):

Yun, Kyung Suk; Cho, Byung Won; Cho, Won Il; Kim,

Hyung Sun; Kim, Un Seok

PATENT ASSIGNEE(S):

Korea Institute of Science and Technology, S.

Korea

SOURCE:

PCT Int. Appl., 34 pp.

CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001091222 W: JP, KR, US	A1	20011129	WO 2000-KR515	20000522
PRIORITY APPLN. INFO.:			WO 2000-KR515	20000522

ED Entered STN: 30 Nov 2001

The present invention provides a lithium secondary battery and its fabrication AB method. More particularly, the present invention provides a lithium secondary battery comprising a porous polymer electrolyte and its fabrication method, wherein the polymer electrolyte is fabricated by the following process: (a) dissolving at least one polymer with plasticizers and organic electrolyte solvents to obtain at least one polymeric electrolyte solution; (b) adding the obtained polymeric electrolyte solution to a barrel of a spray machine, and (c) spraying the polymeric electrolyte solution onto a substrate using a nozzle to form a porous polymer electrolyte film. The lithium secondary battery of the present invention has advantages of better adhesion with electrodes, good mech. strength, better performance at low and high temps., and better compatibility with organic electrolytes of a lithium secondary battery.

IT 9002-86-2, Pvc 9002-88-4, Polyethylene

9003-07-0, Polypropylene 9004-34-6, Cellulose, uses

9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer

24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile

(fabrication method for lithium secondary battery with polymer

```
electrolyte prepared by spray method)
RN
     9002-86-2 HCAPLUS
     Ethene, chloro-, homopolymer (CA INDEX NAME)
CN
     CM
           1
     CRN 75-01-4
     CMF C2 H3 C1
 H_2C \longrightarrow CH - C1
     9002-88-4 HCAPLUS
RN
CN
     Ethene, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 74-85-1
     CMF C2 H4
 H2C=CH2
RN
     9003-07-0 HCAPLUS
CN
     1-Propene, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 115-07-1
     CMF C3 H6
 H3C-CH \longrightarrow CH2
RN
     9004-34-6 HCAPLUS
CN
     Cellulose (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN
     9011-17-0 HCAPLUS
     1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-diffuoroethene
CN
     (CA INDEX NAME)
     CM
          1
     CRN 116-15-4
     CMF C3 F6
```

```
CF2
 F-C-CF3
     CM
          2
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F- C- F
RN
     24937-79-9 HCAPLUS
     Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)
CN
     CM
          1
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F_C_F
RN
     25014-41-9 HCAPLUS
CN
     2-Propenenitrile, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 107-13-1
     CMF C3 H3 N
 H 2 C --- C H-- C --- N
ΙT
     1344-28-1, Alumina, uses 7631-86-9, Silica, uses
     9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide
     allio2 13463-67-7, Titania, uses
        (filling agent; fabrication method for lithium secondary battery
        with polymer electrolyte prepared by spray method)
     1344-28-1 HCAPLUS
RN
CN
     Aluminum oxide (Al2O3) (CA INDEX NAME)
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN
   7631-86-9 HCAPLUS
CN
     Silica (CA INDEX NAME)
```

0== Si == 0

RN 9002-84-0 HCAPLUS CN Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME) CM 1 CRN 116-14-3 CMF C2 F4 RN 12003-67-7 HCAPLUS CN Aluminate (AlO21-), lithium (1:1) (CA INDEX NAME)  $0 \longrightarrow A1 \stackrel{-}{\longrightarrow} 0$ Li+ RN 13463-67-7 HCAPLUS CN Titanium oxide (TiO2) (CA INDEX NAME) IC ICM H01M010-38 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38 ITBattery electrolytes Lamination Plasticizers Polymer electrolytes (fabrication method for lithium secondary battery with polymer electrolyte prepared by spray method) ΙT 79-20-9, Methyl acetate 105-37-3, Ethyl propionate 109-99-9, Thf, 141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate 7791-03-9, Lithium perchlorate 7782-42-5, Graphite, uses 9002-86-2, Pvc 9002-88-4, Polyethylene

9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses 9004-35-7, Cellulose acetate

9004-39-1, Cellulose acetate propionate 9010-76-8, Acrylonitrile-vinylidene chloride copolymer 9010-88-2, Ethyl acrylate-methylmethacrylate copolymer 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24968-79-4, Acrylonitrile-methyl acrylate **24937-79-9**, Pvdf copolymer 24980-34-5, Polyethylenesulfide 25014-41-9, Polyacrylonitrile 25086-89-9, Vinyl acetate-vinyl pyrrolidone 25322-68-3, Peo 25322-69-4, Polypropylene oxide 25667-11-2, Polyethylenesuccinate 26913-06-4, Poly[imino(1,2ethanediyl)] 28726-47-8, Poly(oxymethylene-oxyethylene) 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 98973-15-0, Poly[bis(2-(2-methoxyethoxyethoxy))-phosphazene] (fabrication method for lithium secondary battery with polymer electrolyte prepared by spray method)

IT 554-13-2, Lithium carbonate 1304-28-5, Barium oxide bao, uses
1309-48-4, Magnesia, uses 1310-65-2, Lithium hydroxide 1313-59-3,
Sodium oxide, uses 1344-28-1, Alumina, uses
7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses
9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide
allio2 12047-27-7, Barium titanium oxide batio3, uses 12057-24-8,
Lithia, uses 13463-67-7, Titania, uses 26134-62-3, Lithium
nitride

(filling agent; fabrication method for lithium secondary battery with polymer electrolyte prepared by spray method)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 32 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2001:851557 HCAPLUS Full-text

DOCUMENT NUMBER: 135:374196

TITLE: Fabrication of a lithium secondary battery

comprising a superfine fibrous polymer electrolyte
Yun, Kyung Suk; Cho, Byung Won; Jo, Seong Mu; Lee,
Wha Seop; Cho, Won Il; Park, Kun You; Kim, Hyung
Sun; Kim Un Seok; Ko, Seok Ku; Chun, Suk Won;

Sun; Kim, Un Seok; Ko, Seok Ku; Chun, Suk Won;

Choi, Sung Won

PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S.

Korea

SOURCE: PCT Int. Appl., 33 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001089023 W: JP, KR, US	A1	20011122	WO 2000-KR501	20000519
PRIORITY APPLN. INFO.:			WO 2000-KR501	20000519

ED Entered STN: 23 Nov 2001

AB The present invention provides a lithium secondary battery and its fabrication method. More particularly, the present invention provides a lithium secondary battery comprising super fine fibrous porous polymer electrolyte and its preparation method, wherein the polymer electrolyte is fabricated by the following process: (a) dissolving at least one polymer with plasticizers and y

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organic electrolyte solvents to obtain at least one polymeric electrolyte
      solution; (b) adding the obtained polymeric electrolyte solution to a barrel
      of an electrospinning machine; and, (c) electropinning the polymeric
      electrolyte solution onto a substrate using a nozzle to form a polymer
      electrolyte film. The lithium secondary battery of the present invention has
      advantages of better adhesion with electrodes, good mech. strength, better
      performance at low and high temps., and better compatibility with organic
      electrolytes of a lithium secondary battery.
ΙT
     9002-86-2, Pvc 9002-88-4, Polyethylene
     9003-07-0, Polypropylene 9004-34-6, Cellulose, uses
     9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
     24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile
         (fabrication of lithium secondary battery comprising superfine
        fibrous polymer electrolyte)
     9002-86-2 HCAPLUS
RN
CN
     Ethene, chloro-, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 75-01-4
     CMF C2 H3 C1
 H_2C = CH - C1
     9002-88-4 HCAPLUS
RN
CN
     Ethene, homopolymer (CA INDEX NAME)
     CM
     CRN 74-85-1
     CMF C2 H4
 H_2C \longrightarrow CH_2
RN
     9003-07-0 HCAPLUS
CN
     1-Propene, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 115-07-1
     CMF C3 H6
 H3C-CH \longrightarrow CH2
     9004-34-6 HCAPLUS
RN
CN
     Cellulose (CA INDEX NAME)
```

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

9011-17-0 HCAPLUS RN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene CN (CA INDEX NAME) CM1 CRN 116-15-4 CMF C3 F6 CF2 F-C-CF3 CM 2 CRN 75-38-7 CMF C2 H2 F2 CH₂ F-C-F RN 24937-79-9 HCAPLUS CN Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME) CM 1 CRN 75-38-7 CMF C2 H2 F2 CH2 F-U-F RN 25014-41-9 HCAPLUS CN 2-Propenenitrile, homopolymer (CA INDEX NAME) CM 1 CRN 107-13-1 CMF C3 H3 N H 2 C --- C H-- C --- N

IT **7631-86-9**, Silica, uses

(fabrication of lithium secondary battery comprising superfine fibrous polymer electrolyte) 7631-86-9 HCAPLUS RN CN Silica (CA INDEX NAME) 0<u>___</u>Si___0 ΙT 13463-67-7, Titania, uses (filling agent; fabrication of lithium secondary battery comprising superfine fibrous polymer electrolyte) 13463-67-7 HCAPLUS RN Titanium oxide (TiO2) (CA INDEX NAME) CN0-Ti-0 ΙT 1344-28-1, Alumina, uses 9002-84-0, Ptfe 12003-67-7, Aluminum lithium oxide allio2 (filling agent; fabrication of lithium secondary battery comprising superfine fibrous polymer electrolyte) 1344-28-1 HCAPLUS RN Aluminum oxide (Al2O3) (CA INDEX NAME) CN *** STRUCTURE DIAGRAM IS NOT AVAILABLE *** RN9002-84-0 HCAPLUS CN Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME) CM CRN 116-14-3 CMF C2 F4 12003-67-7 HCAPLUS RN CN Aluminate (AlO21-), lithium (1:1) (CA INDEX NAME) 0=A1=0 Li+

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CC
     52-2 (Electrochemical, Radiational, and Thermal Energy
     Technology)
     Section cross-reference(s): 38
TΤ
     Battery electrolytes
     Plasticizers
     Polymer electrolytes
        (fabrication of lithium secondary battery comprising superfine
        fibrous polymer electrolyte)
IΤ
     79-20-9, Methyl acetate
                               105-37-3, Ethyl propionate
                                                            109-99-9, Thf,
            141-78-6, Ethyl acetate, uses 554-12-1, Methyl propionate
     7791-03-9, Lithium perchlorate 9002-86-2, Pvc
     9002-88-4, Polyethylene 9003-07-0, Polypropylene
     9003-20-7, Polyvinyl acetate 9004-34-6, Cellulose, uses
     9004-35-7, Cellulose acetate
                                   9004-36-8
                                              9004-39-1, Cellulose
     acetate propionate 9010-76-8, Acrylonitrile-vinylidene chloride
                9010-88-2, Ethyl acrylate-methyl methacrylate copolymer
     copolymer
     9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene
     fluoride copolymer
                         12190-79-3, Cobalt lithium oxide colio2
     14283-07-9, Lithium tetrafluoroborate
                                             21324-40-3, Lithium
     hexafluorophosphate
                           24936-67-2, Polyethylenesulfide
     24937-79-9, Pvdf 24968-79-4, Acrylonitrile-methylacrylate
     copolymer 25014-41-9, Polyacrylonitrile
                                               25086-89-9, Vinyl
     acetate-vinylpyrrolidone copolymer
                                         25266-14-2, Oxyethylene-
     oxymethylene copolymer 25322-68-3, Peo 25322-69-4, Polypropylene
             25569-53-3, Polyethylenesuccinate 26913-06-4,
     Poly[imino(1,2-ethanediyl)] 29935-35-1, Lithium hexafluoroarsenate
     33454-82-9, Lithium triflate
                                   98973-15-0, Poly[bis(2-(2-
     methoxyethoxyethoxy) phosphazene]
        (fabrication of lithium secondary battery comprising superfine
        fibrous polymer electrolyte)
ΙT
     7631-86-9, Silica, uses
                               26101-52-0
        (fabrication of lithium secondary battery comprising superfine
        fibrous polymer electrolyte)
IT
     13463-67-7, Titania, uses
        (filling agent; fabrication of lithium secondary battery comprising
        superfine fibrous polymer electrolyte)
IT
     554-13-2, Lithium carbonate 1304-28-5, Barium oxide bao, uses
     1309-48-4, Magnesia, uses 1310-65-2, Lithium hydroxide
     Sodium oxide, uses 1344-28-1, Alumina, uses
                                                 7789-24-4,
     Lithium fluoride, uses 9002-84-0, Ptfe 12003-67-7,
     Aluminum lithium oxide allio2
                                    12047-27-7, Barium titanium oxide
     batio3, uses
                    12057-24-8, Lithia, uses 26134-62-3, Lithium nitride
        (filling agent; fabrication of lithium secondary battery comprising
        superfine fibrous polymer electrolyte)
REFERENCE COUNT:
                               THERE ARE 8 CITED REFERENCES AVAILABLE FOR
                               THIS RECORD. ALL CITATIONS AVAILABLE IN THE
                               RE FORMAT
L45 ANSWER 33 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:
                         2001:598427 HCAPLUS Full-text
DOCUMENT NUMBER:
                         135:183257
TITLE:
                         Method of producing ion conductive laminate for
                         electrolyte application in electrochemical cells
INVENTOR(S):
                         Takeuchi, Masataka; Naijo, Shuichi; Ohkubo,
                         Takashi; Yotsuyanagi, Junji; Hirata, Motoyuki
PATENT ASSIGNEE(S):
                         Japan
SOURCE:
                         U.S. Pat. Appl. Publ., 46 pp., Cont.-in-part of
                         U.S. Ser. No. 822,465, abandoned.
                         CODEN: USXXCO
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Patent

DOCUMENT TYPE:

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

r. 2

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001014420 US 6306509	A1	20010816	US 1997-946850	19971008
WO 9735351	B2 A1	20011023 19970925	WO 1997-JP944	19970321
W: CA, CN, KR, RW: AT, BE, CH, PT, SE	•	, ES, FI, FR	, GB, GR, IE, IT, LU	, MC, NL,
PRIORITY APPLN. INFO.:			JP 1996-93682	A 19960321
			US 1996-14567P	P 19960401
			US 1997-822465	B2 19970321
			WO 1997-JP944	A2 19970321

ED Entered STN: 17 Aug 2001

AB A laminate comprises an ion conductive material having excellent ion conductivity at room temperature or at lower temps., a small water content, sufficiently high mech. strength and storage stability to allow for handling the ion conductive material in practice, and a form which is easily integrated into an electrochem. element or electrochem. devices. Also disclosed is a production method thereof, and a method of producing a battery, a capacitor or an electrochem. element or apparatus using the laminate. The laminate comprises an intermediate layer of an ion conductive material having on the upper and lower portions thereof outer layers having an ion conductivity lower than that of the intermediate layer. Furthermore, at least one of the outer layers is a layer comprising a non-electron-conductive material.

11 9003-07-0, Polypropylene

(method of producing ion conductive laminate for electrolyte application in electrochem. cells)

RN 9003-07-0 HCAPLUS

CN 1-Propene, homopolymer (CA INDEX NAME)

CM 1

CRN 115-07-1 CMF C3 H6

 $H3C-CH \longrightarrow CH2$ 

IT 1344-28-1, Alumina, uses

(method of producing ion conductive laminate for electrolyte application in electrochem. cells)

RN 1344-28-1 HCAPLUS

CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

C ICM B32B003-00

ICS H01M010-26

INCL 429209000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38, 72, 74, 76

IT Battery electrolytes

Electric resistance Electrochromic devices

Electrochromic imaging devices

Ionic conductivity

Laminated materials

Photoelectrochemical cells

Photoelectrodes

(method of producing ion conductive laminate for electrolyte application in electrochem. cells)

IT 7429-90-5, Aluminum, uses 7782-42-5, Graphite, uses

9003-07-0, Polypropylene

(method of producing ion conductive laminate for electrolyte application in electrochem. cells)

IT 429-06-1, Tetraethylammoniumtetrafluoroborate 1344-28-1, Alumina, uses 2926-30-9, Sodium triflate 7791-03-9, Lithium perchlorate 12597-68-1, stainless steel, uses 14283-07-9, Lithium tetrafluoroborate 25038-59-9, Polyethylene terephthalate, uses 25322-68-3, Polyethylene glycol

(method of producing ion conductive laminate for electrolyte application in electrochem. cells)

L45 ANSWER 34 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:

2001:526359 HCAPLUS Full-text

DOCUMENT NUMBER:

135:95194

TITLE:

Polymeric mesoporous separator elements for

laminated lithium-ion rechargeable

batteries

INVENTOR(S):

Dupasquier, Aurelien; Tarascon, Jean-marie

PATENT ASSIGNEE(S):

Valence Technology, Inc., Fr. U.S. Pat. Appl. Publ., 9 pp.

CODEN: USXXCO

DOCUMENT TYPE:

Patent

LANGUAGE:

SOURCE:

English

FAMILY ACC. NUM. COUNT: 2

PATENT INFORMATION:

P.	ATENT NO.	KIND	DATE	APPLICATION NO.	DATE
_					
U	S 2001008734	A1	20010719	US 1998-190353	19981112
U.	s 6537703	B2	20030325		
U	S 6537334	В1	20030325	US 2000-689170	20001012
PRIORI'	TY APPLN. INFO.:			US 1998-190353	A3 19981112

ED Entered STN: 20 Jul 2001

AB A mesoporous polymeric membrane for use as an ionically-conductive interelectrode separator in a rechargeable battery cell is prepared from a coatable
composition comprising a polymeric material, a volatile fluid solvent for the
polymeric material, and a second fluid miscible with and of lesser volatility
than the solvent, the second fluid being a nonsolvent exhibiting no
significant solvency for the polymeric material. A layer is cast from the
composition to form a layer which is gelled and solidified to a selfsupporting membrane by volatilizing the solvent and nonsolvent coating vehicle
fluids under conditions in which the solvent volatilizes at a rate
substantially faster than that of the nonsolvent. As a result the polymeric
material initially gels in the more nonsolvent-predominant regions of the
layer and isolates the nonsolvent as droplets substantially uniformly
distributed throughout a matrix of polymeric material. The nonsolvent is
subsequently volatilized from the droplets to yield a like distribution of

mesopore voids throughout the membrane matrix. The porous membrane is capable of absorbing significant amts. of electrolyte solution to provide suitable ionic conductivity for use in rechargeable battery cells. The addition of inert particulate filler to the coating composition provides further strength in the body of the membrane and, due to preferential accumulation of particles in the dispersed nonsolvent droplets, provides particulate support within the membrane mesopores which prevents collapse of the voids at cell fabrication laminating temps. and thus maintains electrolyte absorption capability. **7631-86-9**, Fumed silica, uses ΙT (colloidal; polymeric mesoporous separator elements for laminated lithium-ion rechargeable batteries) 7631-86-9 HCAPLUS RN Silica (CA INDEX NAME) CN 0==Si==0 ΙT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer (polymeric mesoporous separator elements for laminated lithium-ion rechargeable batteries) 9011-17-0 HCAPLUS RN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene CN (CA INDEX NAME) CM 1 CRN 116-15-4 CMF C3 F6 CF2 F-C-CF3 CM 2 CRN 75-38-7 CMF C2 H2 F2 CH2 F- C-F IC ICM H01M002-16 ICS B29C065-00 INCL 429254000 52-2 (Electrochemical, Radiational, and Thermal Energy

Technology)

Secondary batteries

ΙT

Section cross-reference(s): 38

(lithium; polymeric mesoporous separator elements for laminated lithium-ion rechargeable batteries)

IT Absorption

#### Battery electrolytes

Secondary battery separators

(polymeric mesoporous separator elements for laminated lithium-ion rechargeable batteries)

IT Polyesters, uses

(polymeric mesoporous separator elements for laminated lithium-ion rechargeable batteries)

IT 7631-86-9, Fumed silica, uses

(colloidal; polymeric mesoporous separator elements for laminated lithium-ion rechargeable batteries)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12057-17-9, lithium manganese oxide limn204 21324-40-3, Lithium hexafluorophosphate

(polymeric mesoporous separator elements for laminated lithium-ion rechargeable batteries)

IT 7440-44-0, Carbon, uses

(polymeric mesoporous separator elements for laminated lithium-ion rechargeable batteries)

IT 64-17-5, Ethanol, uses 67-56-1, Methanol, uses 67-63-0, Isopropanol, uses 67-64-1, Acetone, uses 25038-59-9, Polyethylene terephthalate, uses

(polymeric mesoporous separator elements for laminated lithium-ion rechargeable batteries)

L45 ANSWER 35 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2001:452650 HCAPLUS Full-text

DOCUMENT NUMBER: 135:48607

TITLE: Nonaqueous electrolyte batteries INVENTOR(S): Iwamoto, Tatsuya; Yasuda, Hideo

PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001167794	A	20010622	JP 1999-351728	19991210
PRIORITY APPLN. INFO.:			JP 1999-351728	19991210

ED Entered STN: 22 Jun 2001

AB The batteries comprise polymer electrolytes having continuous pores in which inorg. fibers of 5-20  $\mu$ m length and  $\geq$ 5 aspect ratio are included. The polymer electrolytes show high ionic conductivity due to ion transfer in the continuous pores, and high mech. strength and thermal stability due to the fiber additives.

IT 24937-79-9, Polyvinylidene fluoride

(electrolytes; nonaq. electrolyte batteries having inorg.
fiber-reinforced porous polymer electrolytes)

RN 24937-79-9 HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)

CM 1

CRN 75-38-7 CMF C2 H2 F2

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38, 57

IT Fiber-reinforced composites

(polymer matrix, electrolytes; nonaq. electrolyte batteries having inorg. fiber-reinforced porous polymer electrolytes)

IT Battery electrolytes

(polymer; nonaq. electrolyte batteries having inorg. fiber-reinforced porous polymer electrolytes)

IT 24937-79-9, Polyvinylidene fluoride

(electrolytes; nonaq. electrolyte batteries having inorg.

fiber-reinforced porous polymer electrolytes)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses

(fibers; nonaq. electrolyte batteries having inorg.

fiber-reinforced porous polymer electrolytes)

L45 ANSWER 36 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2001:390357 HCAPLUS Full-text

DOCUMENT NUMBER:

134:369466

TITLE:

SOURCE:

Manufacture of porous electrode sheet and porous electrolyte

sheet for secondary battery

INVENTOR(S): Kamiyama, Yasuhiro; Kubo

Kamiyama, Yasuhiro; Kubota, Kazunori; Ozaki,

Yusuke

PATENT ASSIGNEE(S):

Matsushita Electric Industrial Co., Ltd., Japan

Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO. KIND DATE APPLICATION NO. DATE

JP 2001148243 Α 20010529 JP 1999-330523 19991119 JP 1999-330523 JP 1999-330523 PRIORITY APPLN. INFO.: 19991119 ED Entered STN: 30 May 2001 AB A mixture containing active mass particles and thermoplastic polymers is extruded from a nozzle onto current collectors for manufacturing the electrode sheet. A mixture containing inorg. fillers and thermoplastic polymers is extruded from a nozzle for manufacturing the electrolyte sheet. Porosity of the sheets can be controlled by the method even without using solvents or plasticizers. IT 9002-84-0, Polytetrafluoroethylene 9003-07-0, Polypropylene 24937-79-9, Polyvinylidene fluoride (extrusion of thermoplastic polymer with battery component for manufacturing porous sheet for battery electrode or electrolyte) 9002-84-0 HCAPLUS RNCN Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME) CM CRN 116-14-3 CMF C2 F4 9003-07-0 HCAPLUS RN CN 1-Propene, homopolymer (CA INDEX NAME) CM 1 CRN 115-07-1 CMF C3 H6  $H3C-CH \longrightarrow CH2$ 24937-79-9 HCAPLUS RN CN Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME) CM 1 CRN 75-38-7 CMF C2 H2 F2

```
ΙT
     7631-86-9, Silica, uses
         (filler, electrolyte sheet; extrusion of thermoplastic
        polymer with battery component for manufacturing porous
        sheet for battery electrode or electrolyte)
     7631-86-9 HCAPLUS
RN
CN
     Silica (CA INDEX NAME)
 0-Si-0
ΙT
     9002-88-4, LDPE
        (low-d.; extrusion of thermoplastic polymer with battery component
        for manufacturing porous sheet for battery electrode
        or electrolyte)
     9002-88-4 HCAPLUS
RN
     Ethene, homopolymer (CA INDEX NAME)
CN
     CM
          1
     CRN 74-85-1
     CMF C2 H4
 H_2C \longrightarrow CH_2
IC
     ICM H01M004-04
     ICS H01M004-62; H01M010-40
CC
     52-2 (Electrochemical, Radiational, and Thermal Energy
     Technology)
     Section cross-reference(s): 38
ST
     porous thermoplastic polymer sheet extrusion
     battery electrode; filler thermoplastic polymer porous
     sheet extrusion battery electrolyte
     Carbon black, uses
TΤ
        (anode sheet; extrusion of thermoplastic polymer with
        battery component for manufacturing porous sheet for
        battery electrode or electrolyte)
     Battery electrodes
IT
       Battery electrolytes
        (extrusion of thermoplastic polymer with battery component for
        manufacturing porous sheet for battery electrode or
        electrolyte)
TT
     Fluoropolymers, uses
     Polyamides, uses
        (extrusion of thermoplastic polymer with battery component for
        manufacturing porous sheet for battery electrode or
        electrolyte)
ΙT
     52627-24-4, Cobalt lithium oxide
        (cathode active mass; extrusion of thermoplastic polymer with
        battery component for manufacturing porous sheet for
        battery electrode or electrolyte)
ΤТ
     9002-84-0, Polytetrafluoroethylene 9003-07-0,
                     9003-53-6, Polystyrene 24937-79-9,
     Polypropylene
     Polyvinylidene fluoride
```

(extrusion of thermoplastic polymer with battery component for manufacturing porous sheet for battery electrode or electrolyte)

ΙT 7631-86-9, Silica, uses

> (filler, electrolyte sheet; extrusion of thermoplastic polymer with battery component for manufacturing porous sheet for battery electrode or electrolyte)

IT 9002-88-4, LDPE

> (low-d.; extrusion of thermoplastic polymer with battery component for manufacturing porous sheet for battery electrode or electrolyte)

L45 ANSWER 37 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2001:338905 HCAPLUS Full-text

DOCUMENT NUMBER: 134:329094

TITLE: Layered arrangements of lithium electrodes having

a thin barrier layer

INVENTOR(S): Chu, May-Ying; Visco, Steven J.; Dejonghe, Lutgard

PATENT ASSIGNEE(S): Polyplus Battery Company, Inc., USA

SOURCE: PCT Int. Appl., 51 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 3

PATENT INFORMATION:

PA'	TENT	NO.			KIN	D	DATE			APPL	ICAT	ION	NO.		D	ATE
WO	2001	0336	 51		A1		2001	0510		WO 2	000-	 US29	 732		2	0001027
	W:						AU,									
							DK,									
							IN,									
							MA,									
							SE,									
							ZA,				•	•				,
	RW:	GH,	GM,	KE,	LS,	MW,	MZ,	SD,	SL,	SZ,	TZ,	UG,	ZW,	AT,	BE.	CH,
							FR,									
							CM,									
US	6413															9991101
																0000816
																0001027
	1230															0001027
	R:	AT,	BE,	CH,	DE,	DK,	ES,	FR,	GB,	GR,	IT,	LI,	LU,	NL,	SE,	MC,
							FI,									
BR	2000	0151:	11		Α		2002	1126	]	BR 2	000-	1511:	1		2	0001027
JP	2003	52989	95		$\mathbf{T}$		2003	1007		JP 2	001-	53524	47		2	0001027
AU	7799	44			В2		20050	0217	i	AU 2	001-	1240	7		2	0001027
	20021						20023	1107	I	MX 2	002-1	PA43	10		2	0020430
PRIORITY	( APP	LN.	INFO.	. :					ı	US 1	999-	43119	90	Z	A 1	9991101
									į	US 2	000-	64046	67	7	A 2	0000816
									T	ντ <b>Ο</b> 2	000-1	1020	722	т.	.T O	0001027
									,	NO 2	000-0	1329	132	٧	v Z	0001027

Entered STN: 11 May 2001 ΕD

A method employing a bonding layer is used to form metal electrodes with a barrier layer. The method involves fabricating a lithium, or other active material, electrode without depositing a barrier layer on the layer of active material. Rather a smooth barrier layer is formed on a smooth substrate such

```
as a polymeric electrolyte. A bonding layer is formed on the barrier layer
      and the bonding layer is then bonded to the active material.
ΙT
     9002-88-4, Polyethylene 13463-67-7, Titania, uses
         (bonding layer; layered arrangements of lithium electrodes having
        thin barrier layer)
     9002-88-4 HCAPLUS
RN
CN
     Ethene, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 74-85-1
     CMF C2 H4
 H2C==CH2
RN
     13463-67-7 HCAPLUS
CN
     Titanium oxide (TiO2) (CA INDEX NAME)
 0-Ti-0
IT
     24937-79-9
        (layered arrangements of lithium electrodes having thin barrier
        layer)
     24937-79-9 HCAPLUS
RN
     Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)
CN
     CM
          1
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F—C—F
IC
     ICM H01M004-04
     ICS H01M004-40; H01M004-66
CC
     52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
     Section cross-reference(s): 38
IT
     Laminated materials
        (barrier layer; layered arrangements of lithium electrodes having
        thin barrier layer)
ΙT
     Adhesion, physical
     Battery anodes
       Battery electrolytes
     Ionic conductivity
        (layered arrangements of lithium electrodes having thin barrier
        layer)
```

ΙT 7439-92-1, Lead, uses 7439-95-4, 1309-36-0, Pyrite, uses Magnesium, uses 7439-96-5, Manganese, uses 7440-21-3, Silicon, 7440-22-4, Silver, uses 7440-32-6, Titanium, uses 7440-36-0, Antimony, uses 7440-44-0, Carbon, uses 9002-88-4 11099-11-9, Vanadium oxide 12017-00-4, Cobalt oxide 12035-36-8, Nickel oxide nio2 13463-67-7, Titania, 18282-10-5, Tin dioxide uses 18868-43-4, Molybdenum dioxide 25233-30-1, Polyaniline 25322-68-3, Peo 30604-81-0, Polypyrrole 197667-28-0, Manganese oxide mn2o4 (bonding layer; layered arrangements of lithium electrodes having thin barrier layer)

IT 24937-79-9 25038-59-9, Polyethyleneterephthalate, uses
(layered arrangements of lithium electrodes having thin barrier

layer)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 38 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2000:601229 HCAPLUS Full-text

DOCUMENT NUMBER: 133:254873

TITLE: Novel microporous poly(vinylidene fluoride) blend

electrolytes for lithium-ion batteries

AUTHOR(S): Wang, Hongpeng; Huang, Haitao; Wunder, Stephanie

L.

CORPORATE SOURCE: Department of Chemistry, Temple University,

Philadelphia, PA, 19122, USA

SOURCE: Journal of the Electrochemical Society (2000),

147(8), 2853-2861

CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 30 Aug 2000

Novel microporous poly(vinylidene fluoride)-hexafluoropropylene copolymer AB (PVDF-HFP) blend electrolyte/electrode films were obtained as the result of phase separation between PVDF-HFP and PEO oligomer additives, which were cast from a common solvent. Upon solvent evaporation and removal of the additives, an interconnected microporous morphol. was formed. The additives can either be removed from the films by vacuum evaporation or methanol extraction The conductivities of the methanol extracted microporous (pore sizes range from 1to 5  $\mu m$ ) films formed from PVDF-HFP/PEO oligomer blends after electrolyte activation are more than 70% higher than those of the methanol extracted nanoporous (pore size in range from 10 to 100 nm) films prepared from PVDF-HFP/dibutyl phthalate blends. Microporous films formed by vacuum evaporation had conductivities similar to solvent extracted nanoporous separators. Battery performance tests were carried out using lithium cobalt dioxide as the cathode and mesocarbon microbeads as the anode. The cells prepared using extracted microporous PVDF-HFP/PEO oligomer blend films as separators show more than 40% higher specific discharge capacity at the C/2 rate, and 70% higher rate capability than those using extracted nanoporous separators.

IT 7631-86-9, Fumed silica, uses

(colloidal; microporous poly(vinylidene fluoride) blend electrolytes for lithium-ion batteries)

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

```
ΙT
     9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
        (microporous poly(vinylidene fluoride) blend electrolytes for
        lithium-ion batteries)
     9011-17-0 HCAPLUS
RN
CN
     1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene
     (CA INDEX NAME)
     CM
          1
     CRN 116-15-4
     CMF C3 F6
   CF2
 F-C-CF3
     CM
          2
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F_ C_ F
     52-2 (Electrochemical, Radiational, and Thermal Energy
CC
     Technology)
     Section cross-reference(s): 38
     Battery electrolytes
ΙT
     Electric conductivity
     Ionic conductivity
     Polymer electrolytes
       Polymer morphology
     Secondary battery separators
        (microporous poly(vinylidene fluoride) blend electrolytes for
        lithium-ion batteries)
     7631-86-9, Fumed silica, uses
IΤ
        (colloidal; microporous poly(vinylidene fluoride) blend
        electrolytes for lithium-ion batteries)
     96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
     Propylene carbonate 616-38-6, Dimethyl carbonate 9011-17-0
     , Hexafluoropropylene-vinylidene fluoride copolymer
                                                           12190-79-3,
                                  14283-07-9, Lithium tetrafluoroborate
     Cobalt lithium oxide colio2
     21324-40-3, Lithium hexafluorophosphate
        (microporous poly(vinylidene fluoride) blend electrolytes for
        lithium-ion batteries)
REFERENCE COUNT:
                               THERE ARE 45 CITED REFERENCES AVAILABLE FOR
                               THIS RECORD. ALL CITATIONS AVAILABLE IN THE
                               RE FORMAT
```

L45 ANSWER 39 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2000:442060 HCAPLUS Full-text

DOCUMENT NUMBER: 133:46207

TITLE: Microporous solid electrolytes for lithium

secondary batteries

INVENTOR(S): Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun; Hong,

Sung Min

PATENT ASSIGNEE(S): Finecell Co., Ltd., S. Korea

SOURCE: PCT Int. Appl., 46 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.						KIND DATE				APPLICATION NO.						DATE		
WO	WO 2000038263				A1	A1 2000			0000629		WO 1999-KR798					19991221		
		CN,			CV.	D.	DI											
	KW:		PT,		CY,	DE,	, DK,	ES,	FI,	FR	, GB,	GR,	IE,	IT,	LU,	MC,		
EP	1171	927			A1		2002	0116		ΕP	1999-	9600	09		1	9991221		
	R:	AT,	BE,	CH,	DE,	DK,	, ES,	FR,	GB,	GR	, IT,	LI,	LU,	NL,	SE,	MC,		
		PT,	ΙE,	FI														
JP	2002	5435	54		T		2002	1217		JP .	2000-	5902	41		1	9991221		
PRIORIT	Y APP	LN.	INFO	.:						KR	1998-	5703	1	i	A 1	.9981222		
									,	WO :	1999-	KR79	В	1	W 1	.9991221		

ED Entered STN: 30 Jun 2000

The present invention relates to a solid electrolyte having a good AΒ conductivity to lithium ion by allowing the liquid components and lithium salts to be absorbed into the electrolyte film containing an absorbent added at the time of its preparation and having a porosity, a process for preparing the same and a rechargeable lithium cell using the same as an electrolyte. As the absorbent, inorg. materials having not more than 40  $\mu m$  of particle size can be used. As the polymer binder, any binder whose solubility against the liquid electrolyte is small can be used. A wet process can introduce the porous structure of the electrolyte film. The solid electrolyte according to the present invention has the ionic conductivity of more than approx. 1 to 3  $\times$ 10-3 S/cm at room temperature and low reactivity to lithium metal. The cell is fabricated from the solid electrolyte together with electrodes by lamination or pressing methods and, the liquid electrolyte, which is decomposed by moisture, is introduced to a cell just before packaging. Therefore, the solid electrolyte according to the present invention is not affected by the humidity and temperature conditions during the manufacturing of the electrolyte film. In addition, the solid electrolyte according to the present invention has high thermal, mech. and electrochem. stability, and thus is suitable as an electrolyte for rechargeable lithium cells.

IT 9002-88-4 9003-07-0, Polypropylene 9004-34-6

, Cellulose, uses

(absorbent; microporous solid electrolytes for lithium secondary batteries)

RN 9002-88-4 HCAPLUS

CN Ethene, homopolymer (CA INDEX NAME)

CM 1

CRN 74-85-1 CMF C2 H4  $H_2C \longrightarrow CH_2$ 

RN 9003-07-0 HCAPLUS CN 1-Propene, homopolymer (CA INDEX NAME) CM1 CRN 115-07-1 CMF C3 H6  ${\tt H3C-CH--CH_2}$ RN 9004-34-6 HCAPLUS CN Cellulose (CA INDEX NAME) *** STRUCTURE DIAGRAM IS NOT AVAILABLE *** ΙT 9002-86-2, Pvc 9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile (binder; microporous solid electrolytes for lithium secondary batteries) RN 9002-86-2 HCAPLUS CN Ethene, chloro-, homopolymer (CA INDEX NAME) CM 1 CRN 75-01-4 CMF C2 H3 C1  $H_2C \longrightarrow CH - C1$ RN 9011-17-0 HCAPLUS CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (CA INDEX NAME) CM 1 CRN 116-15-4 CMF C3 F6 CF2 || F-C-CF3

```
CM
          2
     CRN 75-38-7
     CMF C2 H2 F2
   CH<sub>2</sub>
 F-C-F
RN
     24937-79-9 HCAPLUS
CN
     Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 75-38-7
     CMF C2 H2 F2
   CH<sub>2</sub>
 F-C-F
     25014-41-9 HCAPLUS
RN
CN
     2-Propenenitrile, homopolymer (CA INDEX NAME)
     CM
          1
     CRN 107-13-1
     CMF C3 H3 N
 H 2 C === C H = C === N
ΙT
     1344-28-1, Alumina, uses 7631-86-9, Silica, uses
        (porous, absorbent; microporous solid electrolytes for
        lithium secondary batteries)
     1344-28-1 HCAPLUS
RN
     Aluminum oxide (Al2O3) (CA INDEX NAME)
CN
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN
     7631-86-9 HCAPLUS
CN
     Silica (CA INDEX NAME)
```

10/748,363 IC ICM H01M010-36 52-2 (Electrochemical, Radiational, and Thermal Energy CC Technology) Section cross-reference(s): 38 ΙT Absorbents Battery electrolytes (microporous solid electrolytes for lithium secondary batteries) 9002-88-4 9003-07-0, Polypropylene ΙT 9003-53-6, Polystyrene 9004-34-6, Cellulose, uses (absorbent; microporous solid electrolytes for lithium secondary batteries) IT 9002-86-2, Pvc 9002-89-5, Polyvinyl alcohol

IT 9002-86-2, Pvc 9002-89-5, Polyvinyl alcohol 9003-21-8, 2-Propenoic acid, methyl ester, homopolymer 9003-27-4, Polyisobutylene 9011-14-7, Pmma 9011-17-0, Vinylidene fluoride-hexafluoropropylene copolymer 9012-09-3, Cellulose triacetate 9016-00-6, Polydimethylsiloxane 17831-71-9, Tetraethyleneglycol diacrylate 24937-79-9, Pvdf 25014-41-9, Polyacrylonitrile 25322-68-3 26967-02-2, Poly(butylidene) 114481-92-4, Maleic anhydride-Vinylidene fluoride copolymer

(binder; microporous solid electrolytes for lithium secondary batteries)

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L45 ANSWER 40 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2000:442059 HCAPLUS Full-text DOCUMENT NUMBER: 133:46206

TITLE: Solid electrolytes using absorbent for

rechargeable lithium batteries

INVENTOR(S): Jang, Dong Hun; Kim, Sa Heum; Kim, Han Jun; Oh,

Seung Mo

PATENT ASSIGNEE(S): Finecell Co., Ltd., S. Korea

SOURCE: PCT Int. Appl., 37 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND DATE	APPLICATION NO.	DATE
WO 2000038262 W: CN, JP, US	A1 2000062	9 WO 1999-KR797	19991221
•	CY, DE, DK, ES	, FI, FR, GB, GR, IE,	IT, LU, MC,
EP 1145354	A1 2001101	7 EP 1999-960008	19991221
R: AT, BE, CH, PT, IE, FI	DE, DK, ES, FF	, GB, GR, IT, LI, LU,	
JP 2002543553	T 2002121	7 JP 2000-590240	19991221
PRIORITY APPLN. INFO.:		KR 1998-57030	A 19981222
		WO 1999-KR797	W 19991221

ED Entered STN: 30 Jun 2000

```
The present invention relates to a solid electrolyte having conductivity to
AB
      lithium ion by providing spaces for liquid component and lithium salts to be
      absorbed by way of introducing an absorbent to the inside of an electrolyte
      film, a process for preparing the same and a rechargeable lithium cell using
      the same. As the absorbent, polymers or inorg. materials having not more than
      40~\mu\text{m} of particle size can be used. As the polymer binder, any binder whose
      solubility against the liquid electrolyte is small can be used. The solid
      electrolyte according to the present invention has the ionic conductivity of
      more than approx. 10-4 S/cm at room temperature The cell is fabricated from
      the solid electrolyte together with electrodes by lamination or pressing
               The liquid electrolyte, which is decomposed by moisture, is
      introduced to a cell just before packaging. Therefore, the solid electrolyte
      according to the present invention is not affected by the humidity and
      temperature conditions during the manufacturing of the electrolyte film.
      addition, the solid electrolyte according to the present invention has high
      mech. strength and little reactivity to lithium metal, and thus is suitable as
      an electrolyte for rechargeable lithium cells.
     1344-28-1, Alumina, uses 7631-86-9, Silica, uses
IT
        (porous, particles; solid electrolytes using absorbent
        for rechargeable lithium batteries)
RN
     1344-28-1 HCAPLUS
     Aluminum oxide (Al2O3) (CA INDEX NAME)
CN
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
     7631-86-9 HCAPLUS
RN
     Silica (CA INDEX NAME)
CN
 0 - si - 0
ΙT
     9002-86-2, Polyvinyl chloride 9002-88-4
     9003-07-0, Polypropylene 9004-34-6, Cellulose, uses
     9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
     24937-79-9, Polyvinylidene fluoride 25014-41-9,
     Polyacrylonitrile
        (solid electrolytes using absorbent for rechargeable lithium
        batteries)
RN
     9002-86-2 HCAPLUS
CN
     Ethene, chloro-, homopolymer (CA INDEX NAME)
     CM
          1
     CRN
         75-01-4
     CMF C2 H3 C1
 H_2C = CH - C1
RN
     9002-88-4 HCAPLUS
CN
     Ethene, homopolymer (CA INDEX NAME)
          1
     CM
     CRN 74-85-1
```

CMF C2 H4

 $H_2C \longrightarrow CH_2$ 

RN 9003-07-0 HCAPLUS
CN 1-Propene, homopolymer (CA INDEX NAME)
CM 1

CRN 115-07-1 CMF C3 H6

 $H3C-CH \longrightarrow CH2$ 

RN 9004-34-6 HCAPLUS

CN Cellulose (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (CA INDEX NAME)

CM 1

CRN 116-15-4 CMF C3 F6

CF2 || |F-C-CF3

CM 2

CRN 75-38-7 CMF C2 H2 F2

CH2 F-C-F

RN 24937-79-9 HCAPLUS CN Ethene, 1,1-difluoro-, homopolymer (CA INDEX NAME)

CM 3

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CRN 75-38-7
     CMF C2 H2 F2
   CH<sub>2</sub>
 F-C-F
     25014-41-9 HCAPLUS
RN
     2-Propenenitrile, homopolymer (CA INDEX NAME)
CN
     CM
          1
     CRN 107-13-1
     CMF C3 H3 N
 H 2 C --- C H -- C --- N
IC
     ICM H01M010-36
     52-2 (Electrochemical, Radiational, and Thermal Energy
     Technology)
     Section cross-reference(s): 38
ΙT
     Absorbents
       Battery electrolytes
     Cellulose pulp
        (solid electrolytes using absorbent for rechargeable lithium
        batteries)
IT
     1344-28-1, Alumina, uses 7631-86-9, Silica, uses
        (porous, particles; solid electrolytes using absorbent
        for rechargeable lithium batteries)
ΙT
     9002-86-2, Polyvinyl chloride 9002-88-4
                                                9002-89-5,
     Polyvinyl alcohol 9003-07-0, Polypropylene 9003-27-4,
                       9003-53-6, Polystyrene 9004-34-6,
     Polyisobutylene
                       9011-14-7, Pmma 9011-17-0,
     Cellulose, uses
     Hexafluoropropylene-vinylidene fluoride copolymer 9012-09-3,
     Cellulose triacetate 17831-71-9, Tetraethylene glycol diacrylate
     24937-79-9, Polyvinylidene fluoride 25014-41-9,
     Polyacrylonitrile 25322-68-3
                                     26967-02-2, Poly(butylidene)
     114481-92-4, Maleic anhydride-vinylidene fluoride copolymer
        (solid electrolytes using absorbent for rechargeable lithium
        batteries)
REFERENCE COUNT:
                         2
                               THERE ARE 2 CITED REFERENCES AVAILABLE FOR
                               THIS RECORD. ALL CITATIONS AVAILABLE IN THE
                               RE FORMAT
L45 ANSWER 41 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER:
                         1999:686490 HCAPLUS Full-text
DOCUMENT NUMBER:
                         131:301471
TITLE:
                         Method for laminating solid polymer electrolyte
                         film
INVENTOR(S):
                         Yotsuyanagi, Junji; Hirata, Motoyuki
```

U.S., 9 pp., Cont.-in-part of U.S. Ser. No.

Showa Denko K.K., Japan

PATENT ASSIGNEE(S):

SOURCE:

822,977, abandoned.

CODEN: USXXAM

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PAT	ENT	NO.			KIN	D	DATE	;	APP	LICAT	ION	NO.		D	ATE	
						-								_		-
US	5972	054			Α		1999	1026	US	1997-	9468	82		1	9971008	3
WO	9735	350			A1		1997	0925	WO	1997-	JP94	5		1	9970323	L
	W:	CA,	CN,	KR,	SG,	US										
	D 5-7 -	7 (17)	חח	CII		DIZ	П.О	7"1 7"	 	~~	777 779		~ ~~			

RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,

PT, SE

PRIORITY APPLN. INFO.:

JP 1996-93681 A 19960321
US 1996-14479P P 19960401
US 1997-822977 B2 19970321
WO 1997-JP945 W 19970321

ED Entered STN: 28 Oct 1999

AB A method for laminating a solid polymer electrolyte film comprises laminating a layer of a fluid solid polymer electrolyte on a base film or on a thin layer comprising a metal or a metal oxide which is laminated on a base film.

IT 1344-28-1, Aluminum oxide (Al2O3), uses 7631-86-9,

Silica, uses

(method for laminating solid polymer electrolyte film)

RN 1344-28-1 HCAPLUS

CN Aluminum oxide (Al2O3) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

0<u>___</u>Si___0

RN 9002-88-4 HCAPLUS

CN Ethene, homopolymer (CA INDEX NAME)

CM 1

CRN 74-85-1 CMF C2 H4

H2C==CH2

RN 9003-07-0 HCAPLUS

CN 1-Propene, homopolymer (CA INDEX NAME)

CM 1

CRN 115-07-1 CMF C3 H6

H3C-CH-CH2

H01M006-00 TC INCL 429217000

52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38, 76

IT Battery electrolytes

Laminated plastic films

Polymer electrolytes

(method for laminating solid polymer electrolyte film)

1344-28-1, Aluminum oxide (Al2O3), uses 7631-86-9, ΙT

Silica, uses

(method for laminating solid polymer electrolyte film)

TΤ 7429-90-5, Aluminum, uses 9002-88-4, Polyethylene

9003-07-0, Polypropylene

(method for laminating solid polymer electrolyte film)

REFERENCE COUNT: 12 THERE ARE 12 CITED REFERENCES AVAILABLE FOR

THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L45 ANSWER 42 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN 1999:114405 HCAPLUS Full-text ACCESSION NUMBER:

DOCUMENT NUMBER: 130:184886

TITLE: Lithium batteries with solid electrolytes

> consisting of nonconducting porous polymer film filled with lithium ionic

conductors

INVENTOR(S): Kamino, Maruo; Fujimoto, Masahisa; Noma,

Toshiyuki; Nishio, Koji

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan SOURCE:

Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11045725	Α	19990216	JP 1997-215598	19970725
PRIORITY APPLN. INFO.:			JP 1997-215598	19970725

ED Entered STN: 19 Feb 1999

The solid electrolyte comprises nonconducting porous polymer film, having its AB pores filled with 20-65 weight% (based on the total of polymer film and inorg. electrolyte) Li ion-conducting inorg. electrolytes. Batteries with large discharge capacity and high discharge rate are obtained. Polyethylene was blended with liquid paraffin and LiTi2(PO4)3, formed into a sheet, and treated with methylene chloride for elution of paraffin to give a porous sheet. The pore of the prepared sheet was laminated on cathode and impregnated with

polyethylene glycol methacrylate-LiClO4 and irradiated with electron beam to

give a polymer electrolyte. A battery obtained using the electrolyte showed excellent discharging characteristics. ΙT 9002-88-4, Polyethylene (nonconducting polymer film; lithium battery electrolytes comprising nonconducting porous polymer films filled with Li ionic conductors) 9002-88-4 HCAPLUS RNCN Ethene, homopolymer (CA INDEX NAME) CM 1 CRN 74-85-1 CMF C2 H4 H2C-CH2 IT 7631-86-9, Silica, uses (solid electrolyte; lithium battery electrolytes comprising nonconducting porous polymer films filled with Li ionic conductors) 7631-86-9 HCAPLUS RN Silica (CA INDEX NAME) CN 0==Si==0 IC ICM H01M006-18 H01M006-18; C08J009-00; H01M010-40; C08K003-16; C08K003-22; C08K003-28; C08K003-30; C08K003-32; C08K003-34; C08K003-38; C08L101-00 52-2 (Electrochemical, Radiational, and Thermal Energy CC Technology) Section cross-reference(s): 38 IT Porous materials (films, polymer; lithium battery electrolytes comprising nonconducting porous polymer films filled with Li ionic conductors) Battery electrolytes IT (lithium battery electrolytes comprising nonconducting porous polymer films filled with Li ionic conductors) ITIonic conductors (lithium; lithium battery electrolytes comprising nonconducting porous polymer films filled with Li ionic conductors) IT Acrylic polymers, uses Fluoropolymers, uses Polyesters, uses Polyolefins (nonconducting polymer film; lithium battery electrolytes comprising nonconducting porous polymer films filled with Li ionic conductors)

IT Films

(porous, polymer; lithium battery electrolytes comprising nonconducting porous polymer films filled with Li ionic conductors)

IT Polymer electrolytes

(solid electrolyte; lithium battery electrolytes comprising nonconducting **porous** polymer **films** filled with Li ionic conductors)

7439-93-2D, Lithium, polyethylene glycol methacrylate complexes, uses
9056-77-3D, Polyethylene glycol methacrylate, lithium complexes
(Li ionic conductor; lithium battery electrolytes comprising
nonconducting porous polymer films filled with
Li ionic conductors)

IT 9002-88-4, Polyethylene

(nonconducting polymer film; lithium battery electrolytes
comprising nonconducting porous polymer films
filled with Li ionic conductors)

ΙT 1303-86-2, Boria, uses 1310-65-2, Lithium hydroxide 1314-34-7, Vanadium oxide (V2O3) 1314-56-3, Phosphorus oxide (P2O5), uses **7631-86-9**, Silica, uses 10377-51-2, Lithium iodide 12007-33-9, Boron sulfide (B2S3) 12031-66-2, Lithium tantalum oxide 12057-24-8, Lithium oxide (Li20), uses (LiTaO3) 12136-58-2, Lithium sulfide (Li2S) 26134-62-3, Trilithium nitride Lithium titanium phosphate (LiTi2(PO4)3) 37220-89-6, Lithium B-alumina

(solid electrolyte; lithium battery electrolytes comprising
nonconducting porous polymer films filled with
Li ionic conductors)

L45 ANSWER 43 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 1998:466303 HCAPLUS Full-text

DOCUMENT NUMBER:

129:97753

TITLE:

Thin film electrolytes for lithium

batteries

INVENTOR(S):
PATENT ASSIGNEE(S):

Hamanaka, Katsuhiko; Yokoyama, Takayuki Asahi Chemical Industry Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10189049	A	19980721	JP 1996-343721	19961224
PRIORITY APPLN. INFO.:			JP 1996-343721	19961224

ED Entered STN: 28 Jul 1998

AB The electrolytes have a Li salt solution impregnated in and immobilized by microporous polyolefin membranes, having thickness  $10-60~\mu m$ , average pore diameter  $0.1-0.6~\mu m$ , porosity 75-90, open porosity 50-90%, and tensile strength  $\geq 130 \, kg/cm2$  in the length direction.

IT 7631-86-9, Nipsil lp, uses

(in manufacture of thin **film** electrolytes containing lithium salt solns. impregnated in **porous** polyolefin membranes for lithium batteries)

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

ΙT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer (thin film electrolytes containing lithium salt solns. impregnated in porous polyolefin membrane laminates for lithium batteries) 9011-17-0 HCAPLUS RN CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (CA INDEX NAME) CM 1 CRN 116-15-4 CMF C3 F6 CF2 F-C-CF3 CM 2 CRN 75-38-7 CMF C2 H2 F2 CH₂ F-U-F ΙT 9002-88-4, Polyethylene (thin film electrolytes containing lithium salt solns. impregnated in porous polyolefin membranes for lithium batteries) 9002-88-4 HCAPLUS RN Ethene, homopolymer (CA INDEX NAME) CN CM CRN 74-85-1 CMF C2 H4

IC ICM H01M010-40

H2C==CH2

0<u>___</u>Si___0

ICS C08J009-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ΙT Battery electrolytes

> (thin film electrolytes containing lithium salt solns. impregnated in porous polyolefin membranes for lithium batteries)

ΙT 117-81-7, Dop 7631-86-9, Nipsil lp, uses (in manufacture of thin film electrolytes containing lithium salt solns. impregnated in porous polyolefin membranes for lithium batteries)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer (thin film electrolytes containing lithium salt solns. impregnated in porous polyolefin membrane laminates for lithium batteries)

ΙT 96-48-0,  $\gamma$ -Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 9002-88-4, Polyethylene 14283-07-9, Lithium fluoroborate (thin film electrolytes containing lithium salt solns. impregnated in porous polyolefin membranes for lithium batteries)

L45 ANSWER 44 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 1998:184087 HCAPLUS Full-text

DOCUMENT NUMBER:

128:206829

TITLE:

Solid electrolyte composite for electrochemical

reaction apparatus

INVENTOR(S):

Bahar, Bamdad; Rusch, Gregg; Kolde, Jeffrey; Kato,

Hiroshi; Mushiake, Noafumi

PATENT ASSIGNEE(S):

Gore Enterprise Holdings, Inc., USA; Japan

Gore-Tex Inc.

SOURCE:

PCT Int. Appl., 34 pp.

CODEN: PIXXD2

DOCUMENT TYPE:

Patent

LANGUAGE:

English

FAMILY ACC. NUM. COUNT:

PATENT INFORMATION:

PATENT NO.					KIND DATE			APPLICATION NO.								
WO	9811	614					1998	0319							1	9970912
	W:	AL,	AM,	AT,	ΑU,	ΑZ,	ΒA,	BB,	BG,	BR	, BY,	CA,	CH,	CN,	CU,	CZ,
		DE,	DK,	EE,	ES,	FI,	GB,	GE,	GH,	HU	, IL,	IS,	JP,	KE,	KG,	KP,
		KR,	KΖ,	LC,	LK,	LR,	LS,	LT,	LU,	LV	, MD,	MG,	MK,	MN,	MW,	MX,
		NO,	NZ,	PL,	PT,	RO,	RU,	SD,	SE,	SG	, SI,	SK,	SL,	ТJ,	TM,	TR,
							YU,									
	RW:	AT,	BE,	CH,	DE,	DK,	ES,	FI,	FR,	GB	, GR,	IE,	IT,	LU,	MC,	NL,
		PT,	SE													
JP	1009	2444			Α		1998	0410		JP	1996-	2655	33		1	9960913
CA	2264	330			A1		1998	0319		CA	1997-	2264	830		1	9970912
CA	2264	330			С		2002	0611								
AU	9742	687			Α		1998	0402		ΑU	1997-	4268	7		1	9970912
CN	1230	293			Α		1999	0929		CN	1997-	1977	81		1:	9970912
	9586				A1		1999			EΡ	1997-	9410	50		1:	9970912
	9586						2002	1204								
	R:															
US	6242		•	•			2001	0605		US	1997-	9282	07		1:	9970912
	2000						2000	0626		KR	1999-	7020	78		1:	9990312
PRIORITY										JP	1996-	2655	33	i	A 1	9960913

ED Entered STN: 28 Mar 1998

The composite possessing satisfactory ion conduction properties and having excellent mech. strength and heat resistance comprises a microporous polymeric sheet having its pores extending from 1 side to the other; the structure defining the pores being at least partly covered with a functional material selected from inorg. particulate, metal, and an organic polymer; and the pores of the sheet being at least partly filled with polymer electrolyte selected from polymer composition that contains metal salts, polymeric gels that contain electrolyte, and an ion exchange resin. The microporous polymeric sheet is expanded porous PTFE or ultrahigh mol. weight polyethylene. The functional material is a precious metal, fumed SiO2, silica gel, TiO2, C, or Pt.

TT 7631-86-9, Silica, uses 9002-84-0, PTFE
9002-88-4, Polyethylene 13463-67-7, Titanium oxide
(TiO2), uses

(in solid electrolyte composite for electrochem. reaction apparatus)

RN 7631-86-9 HCAPLUS

CN Silica (CA INDEX NAME)

RN 9002-84-0 HCAPLUS CN Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME)

CM 1

CRN 116-14-3 CMF C2 F4

F F

RN 9002-88-4 HCAPLUS CN Ethene, homopolymer (CA INDEX NAME)

CM 1

CRN 74-85-1 CMF C2 H4

H2C==CH2

RN 13463-67-7 HCAPLUS CN Titanium oxide (TiO2) (CA INDEX NAME) 

```
IC
     ICM H01M002-16
     ICS H01M006-18; B01D069-14; H01M008-10; H01G009-02
CC
     52-2 (Electrochemical, Radiational, and Thermal Energy
     Technology)
     Section cross-reference(s): 38
     Battery electrolytes
IT
        (solid composite)
     79-41-4D, Methacrylic acid, esters, polymers with acrylonitrile
IT
     107-13-1D, Acrylonitrile, polymers with methacrylate 7631-86-9
     , Silica, uses 9002-84-0, PTFE 9002-88-4,
     Polyethylene 13463-67-7, Titanium oxide (TiO2), uses
        (in solid electrolyte composite for electrochem. reaction apparatus)
                               THERE ARE 5 CITED REFERENCES AVAILABLE FOR
REFERENCE COUNT:
                               THIS RECORD. ALL CITATIONS AVAILABLE IN THE
                               RE FORMAT
L45 ANSWER 45 OF 45 HCAPLUS COPYRIGHT 2007 ACS on STN
                         1995:874582 HCAPLUS Full-text
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         124:40012
                         Electroplating of poly(tetrafluoroethylene) using
TITLE:
                         plasma enhanced chemical vapor deposited titanium
                         nitride as an interlayer
                         Weber, A.; Dietz, A.; Poeckelmann, R.; Klages,
AUTHOR(S):
                         C.-P.
                         Fraunhofer-Institut Schicht Oberflaechentechnik
CORPORATE SOURCE:
                         Bienroder Weg, Braunschweig, D-38108, Germany
                         Applied Physics Letters (1995), 67(16), 2311-13
SOURCE:
                         CODEN: APPLAB; ISSN: 0003-6951
PUBLISHER:
                         American Institute of Physics
                         Journal
DOCUMENT TYPE:
LANGUAGE:
                         English
     Entered STN: 24 Oct 1995
ED
     A low-temperature process for titanium nitride (TiN) deposition by an electron
AB
     cyclotron resonance (ECR) plasma enhanced CVD process was applied to
     poly(tetrafluoroethylene) (PTFE). Tetrakis(dimethylamido)titanium introduced
     into the downstream region of a nitrogen ECR plasma was used as a precursor
     for TiN deposition at 100°. The thin TiN films (thickness 15-30 nm) act as
     interlayers to activate the electroless deposition of copper followed by an
     electroplating process. Prior to the deposition of the interlayer, the
     samples were treated on a biased susceptor with argon ions to enhance the
     adhesion of the TiN interlayer. This metalization procedure avoids the use of
     toxic and pollutive etching agents and yields adherent copper layers on PTFE.
     Films were characterized by four-point probe resistivity measurements, atomic
     force microscopy, and secondary ion mass spectrometry.
     7631-86-9, Silica, uses
IT
        (TiN deposition on PTFE and on SiO2)
RN
     7631-86-9 HCAPLUS
     Silica (CA INDEX NAME)
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0==Si==0

CN

```
ΙT
     9002-84-0, Poly(tetrafluoroethylene)
        (electroplating on electroless copper on poly(tetrafluoroethylene)
        using plasma enhanced chemical vapor deposited titanium nitride as
        interlayer)
     9002-84-0 HCAPLUS
RN
     Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME)
CN
     CM
          7
     CRN
         116-14-3
     CMF
        C2 F4
CC
     72-8 (Electrochemistry)
     Section cross-reference(s): 38, 56, 75
ΙT
     Polymer morphology
        (of TiN with and without TiN coating)
IT
     7631-86-9, Silica, uses
        (TiN deposition on PTFE and on SiO2)
ΙT
     9002-84-0, Poly(tetrafluoroethylene)
        (electroplating on electroless copper on poly(tetrafluoroethylene)
        using plasma enhanced chemical vapor deposited titanium nitride as
        interlayer)
=> d que 172
             43 SEA FILE=REGISTRY ABB=ON PLU=ON (105-58-8/BI OR 107-31-3/
L2
                BI OR 108-32-7/BI OR 109-94-4/BI OR 109-99-9/BI OR
                110-71-4/BI OR 12003-67-7/BI OR 1344-28-1/BI OR 13463-67-7/
                BI OR 14283-07-9/BI OR 14807-96-6/BI OR 21324-40-3/BI OR
                24937-79-9/BI OR 25014-41-9/BI OR 25322-68-3/BI OR
                25322-69-4/BI OR 28960-88-5/BI OR 33454-82-9/BI OR
                616-38-6/BI OR 623-53-0/BI OR 67-64-1/BI OR 67-68-5/BI OR
                68-12-2/BI OR 7631-86-9/BI OR 7791-03-9/BI OR 872-50-4/BI
                OR 9002-84-0/BI OR 9002-86-2/BI OR 9002-88-4/BI OR
                9003-07-0/BI OR 9003-20-7/BI OR 9003-21-8/BI OR 9003-32-1/B
                I OR 9003-42-3/BI OR 9003-49-0/BI OR 9003-63-8/BI OR
                9004-34-6/BI OR 90076-65-6/BI OR 9011-14-7/BI OR 9011-17-0/
                BI OR 96-47-9/BI OR 96-48-0/BI OR 96-49-1/BI)
              1 SEA FILE=REGISTRY ABB=ON PLU=ON 9002-86-2/RN
L3
              1 SEA FILE=REGISTRY ABB=ON PLU=ON
                                                  9002-88-4/RN
L4
              1 SEA FILE=REGISTRY ABB=ON PLU=ON
                                                  9003-07-0/RN
L5
              1 SEA FILE=REGISTRY ABB=ON PLU=ON
                                                  9004-34-6/RN
L6
              1 SEA FILE=REGISTRY ABB=ON
                                         PLU=ON
                                                  9011-17-0/RN
L7
              1 SEA FILE=REGISTRY ABB=ON
                                         PLU=ON
                                                  25014-41-9/RN
L8
             21 SEA FILE=REGISTRY ABB=ON PLU=ON POLYIMIDE?/CN
L9
              6 SEA FILE=REGISTRY ABB=ON PLU=ON POLYSULFONE?/CN
L10
             34 SEA FILE=REGISTRY ABB=ON PLU=ON POLYURETHANE?/CN
T.11
              2 SEA FILE=REGISTRY ABB=ON PLU=ON NYLON/CN
L12
                                         PLU=ON L2 AND 1-100/F
              8 SEA FILE=REGISTRY ABB=ON
L13
                                          PLU=ON L13 AND PMS/CI
              4 SEA FILE=REGISTRY ABB=ON
L14
                                          PLU=ON SILICA/CN
              1 SEA FILE=REGISTRY ABB=ON
L16
              1 SEA FILE=REGISTRY ABB=ON PLU=ON TALC/CN
L17
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		ŕ	
L18	1	SEA FILE=REGISTRY ABB=ON PLU=ON ALUMINA/CN	
L19		SEA FILE=REGISTRY ABB=ON PLU=ON "TITANIUM OXIDE"/CN	
L20		SEA FILE=REGISTRY ABB=ON PLU=ON ZEOLITE?/CN	
L21			
L22	104	SEA FILE=REGISTRY ABB=ON PLU=ON (L16 OR L17 OR L18 OR	
		L19 OR L20 OR L21)	
L23	69	SEA FILE=REGISTRY ABB=ON PLU=ON (L3 OR L4 OR L5 OR L6 OF	3
		L7 OR L8 OR L9 OR L10 OR L11 OR L12)	
T 2 4	70	SEA FILE=REGISTRY ABB=ON PLU=ON L23 OR L14	
L24	12		
L25		QUE ABB=ON PLU=ON L24	
L26	83462	SEA FILE=HCAPLUS ABB=ON PLU=ON "POLYMER MORPHOLOGY"+PFT,	N
		T, OLD, NEW/CT	
L27	9511	SEA FILE=HCAPLUS ABB=ON PLU=ON "BATTERY ELECTROLYTES"+PR	FΤ
		,NT,OLD,NEW/CT	
т 20	720541	SEA FILE=HCAPLUS ABB=ON PLU=ON L22	
L28			
L29		SEA FILE=HCAPLUS ABB=ON PLU=ON L25 AND L28	
L30		SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND L26	
L32	187	SEA FILE=HCAPLUS ABB=ON PLU=ON L29 AND L27	
L33		QUE ABB=ON PLU=ON FILM# OR LAMIN? OR THINFILM? OR LAYE	
		R? OR OVERLAY? OR OVERLAID? OR LAMEL? OR MULTILAYER? OR S	
		HEET?	
L34		SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L33	~
L35	95	SEA FILE=HCAPLUS ABB=ON PLU=ON L34 AND ELECTROCHEM?/SC, S	3X
L36	26	SEA FILE=HCAPLUS ABB=ON PLU=ON L35 AND POROUS?	
L37		SEA FILE=HCAPLUS ABB=ON PLU=ON "POROUS MATERIALS"+PFT, N	Γ.
υЭΙ	32310		-,
	_	OLD, NEW/CT	
L38		SEA FILE=HCAPLUS ABB=ON PLU=ON L35 AND L37	
L39	5	SEA FILE=HCAPLUS ABB=ON PLU=ON L30 AND ELECTROCHEM?/SC,	SΧ
T.40	140211	SEA FILE=HCAPLUS ABB=ON PLU=ON COMPOSITES+PFT, NT, OLD, NEW	<b>N</b> /
L40	140211		M/
		CT	N/
L41	87	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30	W/
L41 L42	87 17	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40	W /
L41	87 17	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?	W /
L41 L42 L43	87 17 2	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40	W/
L41 L42	87 17 2	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR	W/
L41 L42 L43 L44	87 17 2 2	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?)	W/
L41 L42 L43	87 17 2 2	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42	W/
L41 L42 L43 L44	87 17 2 2 45	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44	W/
L41 L42 L43 L44 L45	87 17 2 2 45	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER?	W/
L41 L42 L43 L44	87 17 2 2 45 3 2	CT  SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30  SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?)  SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42  OR L43 OR L44  SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER?	W/
L41 L42 L43 L44 L45	87 17 2 2 45 3 2	CT  SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30  SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?)  SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42  OR L43 OR L44  SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER?	W/
L41 L42 L43 L44 L45 L45 L47 L48 L49	87 17 2 2 45 45 3 2 4721	CT  SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30  SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?)  SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42  OR L43 OR L44  SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER?	W/
L41 L42 L43 L44 L45 L47 L48 L49 L50	87 17 2 2 45 45 4721 200	CT  SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30  SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?)  SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42  OR L43 OR L44  SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26	W /
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51	87 17 2 2 45 3 2 4721 200 164	CT  SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30  SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?)  SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42  OR L43 OR L44  SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26  SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25	W /
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52	87 17 2 2 45 45 4721 200 164	CT  SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30  SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?)  SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42  OR L43 OR L44  SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26  SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25  SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27	W/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53	87 17 2 2 45 3 2 4721 200 164 0	CT  SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30  SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?)  SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42  OR L43 OR L44  SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26  SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25  SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER?	W/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54	87 17 2 2 45 3 2 4721 200 164 0	CT  SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30  SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?)  SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42  OR L43 OR L44  SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26  SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25  SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27  SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND L48	W/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53	87 17 2 2 45 3 2 4721 200 164 0	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND L48 SEA FILE=HCAPLUS ABB=ON PLU=ON (L52 OR L53 OR L54)	M/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54	87 17 2 2 45 3 2 4721 200 164 0	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND L48 SEA FILE=HCAPLUS ABB=ON PLU=ON (L52 OR L53 OR L54) SEA FILE=HCAPLUS ABB=ON PLU=ON (L52 OR L53 OR L54) SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45	M /
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56	87 17 2 2 45 3 2 4721 200 164 0	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND L48 SEA FILE=HCAPLUS ABB=ON PLU=ON (L52 OR L53 OR L54)	N/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57	87 17 2 2 45 3 2 4721 200 164 0 1 2 3 1	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND L48 SEA FILE=HCAPLUS ABB=ON PLU=ON L52 OR L53 OR L54) SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45	n/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 L58	87 17 2 2 45 45 4721 200 164 0 12 3 1 17719 16946	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L52 OR L53 OR L54) SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L28	N/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 L58 L59	87 17 2 2 45 45 4721 200 164 0 12 3 1 17719 16946 11	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND L48 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L28	n/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 L58 L59 L60	87 17 2 2 45 45 4721 200 164 0 12 3 1 17719 16946 11	CT  SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30  SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?)  SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42  OR L43 OR L44  SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER?  SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26  SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25  SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27  SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND L48  SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45  SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45  SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45  SEA FILE=HCAPLUS ABB=ON PLU=ON L57 NOT L28  SEA FILE=HCAPLUS ABB=ON PLU=ON L57 NOT L28  SEA FILE=HCAPLUS ABB=ON PLU=ON L58 AND L27  SEA FILE=HCAPLUS ABB=ON PLU=ON L59 NOT L45	N/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 L58 L59	87 17 2 2 45 45 4721 200 164 0 12 3 1 17719 16946 11	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND L48 SEA FILE=HCAPLUS ABB=ON PLU=ON L52 OR L53 OR L54) SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L28 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L28 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L56 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L60 AND (COMPOSITE# OR	N/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 L58 L59 L60	87 17 2 2 45 45 3 2 4721 200 164 0 1 17719 16946 11 11	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND L48 SEA FILE=HCAPLUS ABB=ON PLU=ON L52 OR L53 OR L54) SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L28 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L28 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L28 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L56 AND (COMPOSITE# OR	N/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 L58 L59 L60	87 17 2 2 45 3 2 4721 200 164 0 1 17719 16946 11 11	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L52 OR L53 OR L54) SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L57 NOT L28 SEA FILE=HCAPLUS ABB=ON PLU=ON L58 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L58 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L58 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L59 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 AND (COMPOSITE# OR	N/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 L58 L59 L60 L61	87 17 2 2 45 3 2 4721 200 164 0 1 17719 16946 11 11	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L49 AND L26 SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L47 AND L48 SEA FILE=HCAPLUS ABB=ON PLU=ON L52 OR L53 OR L54) SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L28 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L28 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L28 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L56 AND (COMPOSITE# OR	N/
L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 L58 L59 L60 L61 L62 L63	87 17 2 2 45 4721 200 164 0 1 17719 16946 11 11 3	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L48 SEA FILE=HCAPLUS ABB=ON PLU=ON L52 OR L53 OR L54) SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L57 NOT L28 SEA FILE=HCAPLUS ABB=ON PLU=ON L58 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L59 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L59 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L56 OR L61 SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L26	
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L41 L42 L43 L44 L45 L47 L48 L49 L50 L51 L52 L53 L54 L55 L56 L57 L58 L59 L60 L61 L62 L63	87 17 2 2 45 4721 200 164 0 1 17719 16946 11 11 3	CT SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L30 SEA FILE=HCAPLUS ABB=ON PLU=ON L32 AND L40 SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L41 AND (BATTER? OR CATHOD? OR ANOD? OR ELECTROD?) SEA FILE=HCAPLUS ABB=ON PLU=ON L36 OR L38 OR L39 OR L42 OR L43 OR L44 SEA FILE=HCAPLUS ABB=ON PLU=ON FIRST POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON SECOND POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON POROUS POLYMER? SEA FILE=HCAPLUS ABB=ON PLU=ON L50 NOT L25 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND BATTER? SEA FILE=HCAPLUS ABB=ON PLU=ON L51 AND L48 SEA FILE=HCAPLUS ABB=ON PLU=ON L52 OR L53 OR L54) SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L55 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L57 NOT L28 SEA FILE=HCAPLUS ABB=ON PLU=ON L58 AND L27 SEA FILE=HCAPLUS ABB=ON PLU=ON L59 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L59 NOT L45 SEA FILE=HCAPLUS ABB=ON PLU=ON L56 OR L61 SEA FILE=HCAPLUS ABB=ON PLU=ON L40 AND L26	

L67	34	SEA	FILE=HCAPLUS	ABB=ON	PLU=ON	L66	NOT L25
L68	35	SEA	FILE=HCAPLUS	ABB=ON	PLU=ON	L66	NOT L28
L69	36	SEA	FILE=HCAPLUS	ABB=ON	PLU=ON	L67	OR L68
L70	6	SEA	FILE=HCAPLUS	ABB=ON	PLU=ON	L69	AND (PORE# OR POROUS)
L71	16	SEA	FILE=HCAPLUS	ABB=ON	PLU=ON	L69	AND (BATTER? OR
		CATH	HOD? OR ANOD?	OR ELEC'	TROD?)		
L72	22	SEA	FILE=HCAPLUS	ABB=ON	PLU=ON	L62	OR L70 OR L71

#### => d 172 1-22 ibib ed abs hitstr hitind

L72 ANSWER 1 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2007:602874 HCAPLUS Full-text

DOCUMENT NUMBER: 147:198828

TITLE: Controlling the dimensions of carbon nanofiber

structures through the electropolymerization of

pyrrole

AUTHOR(S): Fletcher, Benjamin L.; McKnight, Timothy E.;

Fowlkes, Jason D.; Allison, David P.; Simpson,

Michael L.; Doktycz, Mitchel J.

CORPORATE SOURCE: Molecular Scale Engineering and Nanoscale

Technologies Research Group, Materials Science and

Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN, 37831, USA Synthetic Metals (2007), 157(6-7), 282-289

CODEN: SYMEDZ; ISSN: 0379-6779

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 04 Jun 2007

SOURCE:

Elec. conductive polymers, such as polypyrrole (PPy), show promise for modifying the dimensions and properties of micro- and nanoscale structures. Mechanisms for controlling the formation of PPy films of nanoscale thickness were evaluated by electrochem. synthesizing and examining PPy films on planar Au electrodes under a variety of growth conditions. Tunable PPy coatings were then deposited by electropolymn. on the sidewalls of individual, elec. addressable C nanofibers (CNFs). The ability to modify the phys. size of specific nanofibers in controllable fashion is demonstrated. The biocompatibility, potential for chemical functionalization, and ability to effect volume changes of this nanocomposite can lead to advanced functionality, such as specific, nanoscale valving of materials and morphol. control at the nanoscale.

CC 72-2 (Electrochemistry)

Section cross-reference(s): 35, 36

IT Polymer morphology

(of polypyrrole on carbon nanofibers)

IT Nanocomposites

(polypyrrole-carbon nanofiber)

REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR

THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L72 ANSWER 2 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2007:527922 HCAPLUS Full-text

DOCUMENT NUMBER: 147:127671

TITLE: Formation and evaluation of electrochemically-

active ultra-thin palladium-Nafion nanocomposite

films

AUTHOR(S): Bertoncello, Paolo; Peruffo, Massimo; Unwin,

Patrick R.

CORPORATE SOURCE: Department of Chemistry, University of Warwick,

Coventry, CV4 7AL, UK

SOURCE: Chemical Communications (Cambridge, United

Kingdom) (2007), (16), 1597-1599
CODEN: CHCOFS; ISSN: 1359-7345

PUBLISHER: Royal Society of Chemistry

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 16 May 2007

AB A simple method for producing electrochem.-active Pd nanoparticles within ultra-thin Nafion films is described. Nafion films deposited on ITO electrodes are dipped in Pd nitrate solution and after removing the electrodes from this solution Pd is produced using NaBH4 as reducing agent. These Pd nanoparticles are electrocatalytically active for oxidation of hydrogen.

CC 72-2 (Electrochemistry)

Section cross-reference(s): 38, 52, 56, 67

IT Nanocomposites

(formation and evaluation of electrochem.-active ultra-thin palladium-Nafion nanocomposite films and use as electrocatalysts for hydrogen oxidation)

IT Polymer morphology

(of Nafion film with and without Pd nanoparticles)

IT 50926-11-9, ITO

(formation and evaluation of electrochem.-active ultra-thin palladium-Nafion nanocomposite film on ITO electrodes)

REFERENCE COUNT: 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR

THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L72 ANSWER 3 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2007:492263 HCAPLUS Full-text

DOCUMENT NUMBER: 147:127658

TITLE: Separation and concentration effect of f-MWCNTs on

electrocatalytic responses of ascorbic acid, dopamine and uric acid at f-MWCNTs incorporated

with poly(neutral red) composite films Yogeswaran, Umasankar; Chen, Shen-Ming

AUTHOR(S): Yogeswaran, Umasankar; Chen, Shen-Ming CORPORATE SOURCE: Department of Chemical Engineering and

Biotechnology, National Taipei University of

Technology, Taipei, 106, Taiwan

SOURCE: Electrochimica Acta (2007), 52(19), 5985-5996

CODEN: ELCAAV; ISSN: 0013-4686

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 07 May 2007

AB A novel conductive composite film containing functionalized multi-walled C nanotubes (f-MWCNTs) with poly(neutral red) (PNR) was synthesized on glassy C electrodes (GC) by potentiostatic method. The composite film exhibited promising electrocatalytic oxidation of mixture of biochem. compds. such as ascorbic acid (AA), dopamine (DA) and uric acid (UA) in pH 4.0 aqueous solns. It was also produced on Au electrodes by using electrochem. quartz crystal microbalance technique, which revealed that the functional properties of composite film were enhanced because of the presence of both f-MWCNTs and PNR. The surface morphol. of the polymer and composite film deposited on transparent semiconductor Sn oxide electrodes were studied using SEM and atomic force microscopy. These 2 techniques showed that the PNR was fibrous and incorporated on f-MWCNTs. The electrocatalytic responses of neurotransmitters at composite films were measured using both cyclic

voltammetry (CV) and differential pulse voltammetry (DPV). These expts. revealed that the difference in f-MWCNTs loading present in the composite film affected the electrocatalysis in such a way, that higher the loading showed an enhanced electrocatalytic activity. From further electrocatalysis studies, well separated voltammetric peaks were obtained at the composite film modified GC for AA, DA and UA with the peak separation of 0.17 V between AA-DA and 0.15 V between DA-UA. The sensitivity of the composite film towards AA, DA and UA in DPV technique is 0.028, 0.146 and 0.084  $\mu$ A  $\mu$ M-1, resp.

72-2 (Electrochemistry) CC

Section cross-reference(s): 9, 22, 35, 67, 80

Chemically modified electrodes ΙT

(functionalized multi-walled carbon-poly(neutral red) composite)

Polymer morphology IT

> (of poly(neutral red) and poly(neutral red)-functionalized multi-walled carbon composite films on ITO)

IT Composites

> (separation and concentration effect of functionalized MWCNTs on electrocatalytic oxidation of ascorbic acid, dopamine and uric acid at functionalized MWCNTs incorporated with poly(neutral red) composite films)

50926-11-9, ITO ΙT 7440-57-5, Gold, uses

> (functionalized multi-walled carbon-poly(neutral red) composite on electrode of)

54 THERE ARE 54 CITED REFERENCES AVAILABLE FOR REFERENCE COUNT:

THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L72 ANSWER 4 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN 2006:1320119 HCAPLUS Full-text ACCESSION NUMBER:

DOCUMENT NUMBER: 146:237851

Electrostatic assembly of polyaniline and TITLE:

platinum-poly(amidoamine) dendrimers hybrid

nanocomposite multilayer, and its electrocatalysis

towards CO and O2

Yuan, Junhua; Han, Dongxue; Zhang, Yuanjian; Shen, AUTHOR(S):

YanFei; Wang, Zhijuan; Zhang, Qixian; Niu, Li

State Key Laboratory of Electroanalytical CORPORATE SOURCE:

Chemistry, Changchun Institute of Applied

Chemistry, Graduate School of the Chinese Academy

of Sciences, Chinese Academy of Sciences,

Changchun, 130022, Peop. Rep. China

Journal of Electroanalytical Chemistry (2007), SOURCE:

> 599(1), 127-135 CODEN: JECHES

Elsevier B.V. PUBLISHER:

Journal DOCUMENT TYPE: English LANGUAGE: Entered STN: 18 Dec 2006

The electrostatic layer-by-layer assembly method was successfully used in a AB multilayer buildup of polyaniline (PANI) and Pt nanocrystals encapsulated in the carboxyl-terminated poly(amidoamine) dendrimers (generation 4.5 G4.5COOH) (Pt-G4.5COOH NPs) on solid substrates. Multilayer growth was monitored by UVvisible (UV-visible) absorption spectroscopy. The AFM observation revealed a molecularly smooth (PANI/Pt-G4.5COOH NPs)m multilayer film which is rougher and thicker than the multilayer of PANI and G4.5COOH (G4.5COOH/PANI)m. PANI/Pt-G4.5COOH NPs multilayers show a fast surface-confined electronexchange process at the Au electrode in an acid solution, and remains stable, reversible and electroactive, even in neutral solution Also, the multilayers show a strong electrocatalytic response towards CO oxidation and O2 reduction,

and the catalytic capability can be easily tuned by the control of multilayer thickness.

CC 72-2 (Electrochemistry)

Section cross-reference(s): 36, 67

IT Multilayers

#### Nanocomposites

(electrostatic assembly of polyaniline and platinum-carboxy-terminated poly(amidoamine) dendrimers hybrid nanocomposite multilayers and use as electrocatalysts for CO oxidation and O2 reduction)

#### IT Polymer morphology

(polyaniline and platinum-carboxy-terminated poly(amidoamine)
dendrimers hybrid nanocomposite bilayers)

REFERENCE COUNT:

44 THERE ARE 44 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L72 ANSWER 5 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2006:1267838 HCAPLUS Full-text

DOCUMENT NUMBER:

146:187396

TITLE:

Pore-filling solvent-free polymer electrolytes

based on porous P(VdF-HFP)/P(EO-EC) membranes fo

based on porous P(VdF-HFP)/P(EO-EC) membranes for rechargeable lithium batteries

AUTHOR(S):

Jeon, Jae-Deok; Kwak, Seung-Yeop

CORPORATE SOURCE:

Hyperstructured Organic Materials Research Center

(HOMRC), School of Materials Science and

Engineering, Seoul National University, Seoul,

151-744, S. Korea

SOURCE:

Journal of Membrane Science (2006), 286(1+2),

15-21

CODEN: JMESDO; ISSN: 0376-7388

PUBLISHER:

Elsevier B.V.

DOCUMENT TYPE:

Journal English

LANGUAGE:

ED Entered STN: 05 Dec 2006

Highly porous membranes consisting of poly(vinylidene fluoride-co-AB hexafluoropropylene) [P(VdF-HFP)] and poly(ethylene oxide-co-ethylene carbonate) [P(EO-EC)] were prepared by a phase inversion method using acetone as a solvent and ethylene glycol as a nonsolvent. The presence of viscous P(EO-EC) in the membranes not only contributes to their flexibility but also results in increases in their pore size and porosity. Pore-filling solventfree polymer electrolytes (SPEs) were then prepared by filling the pores of the porous membranes with viscous P(EO-EC) complexed with LiCF3SO3. The ionic conductivities of the SPEs exhibit Arrhenius temperature dependences, with the highest value of 3.7 + 10-5 S/cm at 298 K for E-V6E4; E-VxEy' denotes an electrolyte with a P(VdF-HFP)/P(EO-EC) matrix (x/y by weight%) filled with P(EO-EC)/LiCF3SO3 (in the case of E-V6E4, .apprx.61%). The temperature dependences of ln  $\tau c$  ( $\tau c$  is the correlation time) obtained from 7 Li NMRlinewidth measurements were found for all the SPEs to consist of two distinct regions, above and below the temperature of the slope change, Tsc, with linear Arrhenius behavior in each region. Above Tsc, the temperature region in which the conductivity measurements were carried out, the correlation times,  $\tau c$ , and the corresponding activation energies, Ea, decrease with increases in the amount of P(EO-EC)/LiCF3SO3 electrolyte.

#### IT 9011-17-0

(polymer electrolyte **composite** membranes with P(EO-EC) and P(EO-EC)/Li+ ion complexes; pore-filling solvent-free polymer electrolytes based on porous P(VdF-HFP)/P(EO-EC) membranes for rechargeable lithium batteries)

RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene

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10/748,363
     (CA INDEX NAME)
     CM
     CRN 116-15-4
     CMF C3 F6
   CF<sub>2</sub>
 F-C-CF3
     CM
          2
     CRN 75-38-7
     CMF C2 H2 F2
   CH2
 F-C-F
CC
     52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
     Section cross-reference(s): 38
ΙT
     Polymer morphology
        (of membranes; pore-filling solvent-free polymer electrolytes based
        on porous P(VdF-HFP)/P(EO-EC) membranes for rechargeable lithium
        batteries)
     Battery electrolytes
ΙT
     Ionic conductivity
     Polymer electrolytes
        (pore-filling solvent-free polymer electrolytes based on porous
        P(VdF-HFP)/P(EO-EC) membranes for rechargeable lithium batteries)
ΙT
     106818-19-3P
        (composite membranes with P(VdF-HFP); pore-filling
        solvent-free polymer electrolytes based on porous
        P(VdF-HFP)/P(EO-EC) membranes for rechargeable lithium batteries)
     9011-17-0
ΙT
        (polymer electrolyte composite membranes with P(EO-EC)
        and P(EO-EC)/Li+ ion complexes; pore-filling solvent-free polymer
        electrolytes based on porous P(VdF-HFP)/P(EO-EC) membranes for
        rechargeable lithium batteries)
     17341-24-1DP, complexes with Poly(ethylene oxide-ethylene carbonate),
ΙT
            106818-19-3DP, lithium ion complexes
        (polymer electrolyte composite membranes with p(VdF-HFP)
        and P(EO-EC); pore-filling solvent-free polymer electrolytes based
        on porous P(VdF-HFP)/P(EO-EC) membranes for rechargeable lithium
        batteries)
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L72 ANSWER 6 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2006:915212 HCAPLUS Full-text DOCUMENT NUMBER: 145:445137

15

REFERENCE COUNT:

RE FORMAT

THERE ARE 15 CITED REFERENCES AVAILABLE FOR

THIS RECORD. ALL CITATIONS AVAILABLE IN THE

TITLE: Electrosynthesis of Macroporous Polyaniline-V2O5

Nanocomposites and Their Unusual Magnetic

Properties

AUTHOR(S): Karatchevtseva, Inna; Zhang, Zhaoming; Hanna,

John; Luca, Vittorio

CORPORATE SOURCE: Institute of Materials and Engineering Science,

Australian Nuclear Science and Technology

Organisation, Menai, 2234, Australia

SOURCE: Chemistry of Materials (2006), 18(20), 4908-4916

CODEN: CMATEX; ISSN: 0897-4756

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 08 Sep 2006

This paper reports a novel 2-step 1-pot all-electrochem. method for the AΒ preparation of interpenetrating conducting-polymer (polyaniline, PANI) semiconducting oxide (V2O5) nanocomposites. In the method, a spongy interconnected PANI network is 1st deposited on a Ti metal substrate. The electrodeposited PANI network has pores on the order of a few micrometers and is used as a template for the V2O5 component which is also deposited electrochem. The dimensionality of the amorphous V2O5 that forms can be controlled through control of the c.d. during the deposition, and this in turn reduces the porosity. As the c.d. increases and more V2O5 is deposited, Raman and XPS indicate that the conductivity of the PANI decreases. Regardless of the c.d. used in the range 1-5 mA/cm2, the 51V solid-state NMR spectrum of the V205 component shows a major resonance at .apprx.-8500 ppm which is ascribed to a Knight shift due to interaction of the PANI conduction electrons with the 51V nuclear spin. The magnitude of this 51V Knight shift is unprecedented exceeding by a significant margin any of those previously reported for V oxide compds.

CC 72-2 (Electrochemistry)

Section cross-reference(s): 35, 37, 73, 77

IT Electrodeposits

(composite, nanocomposites; unusual magnetic properties of macroporous polyaniline-V2O5 nanocomposites)

IT Polymerization

(electrochem.; electropolymn. of aniline on titanium plates in HClO4 solution and **electrodeposition** of V2O5 on polyaniline film and unusual magnetic properties of macroporous polyaniline-V2O5 nanocomposites)

IT Electrodeposition

(electropolymn. of aniline on titanium plates in HClO4 solution and electrodeposition of V2O5 on polyaniline film and unusual magnetic properties of macroporous polyaniline-V2O5 nanocomposites)

IT Polyanilines

(electropolymn. of aniline on titanium plates in HClO4 solution and electrodeposition of V2O5 on polyaniline film and unusual magnetic properties of macroporous polyaniline-V2O5 nanocomposites)

IT Binding energy

Polymer morphology

Raman spectra

UV and visible spectra

X-ray photoelectron spectra

(of polyaniline and polyaniline-V2O5 nanocomposites)

IT Magnetic properties

Nanocomposites

(unusual magnetic properties of macroporous polyaniline-V2O5 nanocomposites)

IT 25233-30-1P, Polyaniline

(electropolymn. of aniline on titanium plates in HClO4 solution and

electrodeposition of V205 on polyaniline film and unusual
magnetic properties of macroporous polyaniline-V205 nanocomposites)

IT 1314-62-1P, Vanadium oxide (V2O5), processes

(electropolymn. of aniline on titanium plates in HC104 solution and **electrodeposition** of V205 on polyaniline film and unusual

magnetic properties of macroporous polyaniline-V2O5 nanocomposites)

IT 7440-32-6, Titanium, uses

(electropolymn. of aniline on titanium plates in HClO4 solution and electrodeposition of V2O5 on polyaniline film and unusual

magnetic properties of macroporous polyaniline-V2O5 nanocomposites)

IT 7601-90-3, Perchloric acid, uses

(electropolymn. of aniline on titanium plates in HClO4 solution and electrodeposition of V2O5 on polyaniline film and unusual

magnetic properties of macroporous polyaniline-V2O5 nanocomposites)

IT 62-53-3, Aniline, reactions

(electropolymn. of aniline on titanium plates in HClO4 solution and electrodeposition of V2O5 on polyaniline film and unusual

magnetic properties of macroporous polyaniline-V2O5 nanocomposites)
REFERENCE COUNT: 66 THERE ARE 66 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L72 ANSWER 7 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2006:750565 HCAPLUS <u>Full-text</u>

DOCUMENT NUMBER: 146:442577

TITLE: Electrochemical property of carbon nano-composite

prepared via high dispersion of vapor-grown carbon

fiber by adding polyfluorene

AUTHOR(S): Suematsu, Shunzo

CORPORATE SOURCE: Research Center, Nippon Chemi-con Corporation, 763

Arakawa, Takahagi-shi, Ibaraki, 318-8505, Japan

SOURCE: Tanso (2006), 223, 165-168

CODEN: TASOA3; ISSN: 0371-5345

PUBLISHER: Tanso Zairyo Gakkai

DOCUMENT TYPE: Journal LANGUAGE: Japanese ED Entered STN: 01 Aug 2006

Vapor-grown carbon fibers (VGCFs) were successfully dispersed by addition of polyfluorene (PF) in THF solvent without any reduction in length of the VGCFs. Degree of dispersion of the VGCFs in the solvent was enhanced as a ratio of PF to VGCF increases in the ratio ranged from 1/5 to 5/1, probably because of a polymer wrapping effect of the PF onto the surface of the VGCF. The dispersed PF-coated VGCFs (VGCF/PF) led to the fabrication of uniformly-coated electrodes because of their high dispersibility. Discharge behaviors of the VGCF/PF-based electrodes were also discussed in order to confirm feasibility of the VGCF/PF as an electroactive nano-composite.

CC 37-6 (Plastics Manufacture and Processing)

Section cross-reference(s): 52

IT Electric potential

(charge-discharge curves, for electrodes; electrochem.

property of carbon nano-composite prepared via high dispersion of vapor-grown carbon fiber by adding polyfluorene)

IT Disperse systems

Dispersion (of materials)

Electric capacitance

Electric impedance

#### Electrodes

#### Polymer morphology

(electrochem. property of carbon nano-composite prepared via high dispersion of vapor-grown carbon fiber by adding polyfluorene)

#### IT Nanocomposites

(polyfluorene-vapor grown carbon fibers; electrochem. property of carbon nano-composite prepared via high dispersion of vapor-grown carbon fiber by adding polyfluorene)

L72 ANSWER 8 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2006:261879 HCAPLUS Full-text

DOCUMENT NUMBER: 144:315013

TITLE: Integrating the multifunction necessary for 3-D

batteries into mesoporous

nanoarchitectures

AUTHOR(S): Long, Jeffrey W.; Rhodes, Christopher P.; Lytle,

Justin C.; Pettigrew, Katherine A.; Stroud, Rhonda

M.; Rolison, Debra R.

CORPORATE SOURCE: U.S. Naval Research Laboratory, Washington, DC,

20375, USA

SOURCE: Preprints of Symposia - American Chemical Society,

Division of Fuel Chemistry (2006), 51(1), 311-313

CODEN: PSADFZ; ISSN: 1521-4648

PUBLISHER: American Chemical Society, Division of Fuel

Chemistry

DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English ED Entered STN: 22 Mar 2006

AB A mesoporous MnO2/polymer/RuO2 nanocomposite material was developed with a polymer membrane that contained mobile Li ions. The benefit of the 5-30 nm thick solid polymer electrolyte was the improvement of the rate capability for charge transport. The electrochem. properties of the nanocryst. mixed-conducting oxides provided insight in the understanding of nanoionics.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy

Technology)

ST mesoporous oxide ionic polymer membrane battery; manganese ruthenium oxide polymer membrane electrolyte lithium battery

IT Secondary batteries

(lithium; mesoporous MnO2/polymer/RuO2 nanocomposite material with polymer membrane as battery electrolyte)

IT Battery electrolytes

Nanocomposites

Nanocrystalline materials

Nanoparticles Nanostructures

Polymer morphology

Pore size

Secondary battery separators

(mesoporous MnO2/polymer/RuO2 nanocomposite material with polymer membrane as battery electrolyte)

IT Polyoxyphenylenes

(mesoporous MnO2/polymer/RuO2 nanocomposite material with polymer membrane as battery electrolyte)

IT Porous materials

(mesoporous; mesoporous MnO2/polymer/RuO2 nanocomposite material with polymer membrane as **battery** electrolyte)

1313-13-9, Manganese dioxide, uses 9041-80-9, Poly(phenylene oxide) 12036-10-1, Ruthenium dioxide

(mesoporous MnO2/polymer/RuO2 nanocomposite material with polymer membrane as battery electrolyte)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L72 ANSWER 9 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2006:222157 HCAPLUS <u>Full-text</u>

DOCUMENT NUMBER: 144:441369

TITLE: Chemical and electrochemical synthesis of

polyaniline/platinum composites

AUTHOR(S): Kinyanjui, John M.; Wijeratne, Neloni R.; Hanks,

Justin; Hatchett, David W.

CORPORATE SOURCE: Department of Chemistry, University of Nevada, Las

Vegas, NV, 89154-4003, USA

SOURCE: Electrochimica Acta (2006), 51(14), 2825-2835

CODEN: ELCAAV; ISSN: 0013-4686

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 13 Mar 2006

The synthesis of polyaniline/Pt composites (PANI/Pt) was achieved using both AΒ chemical and electrochem. methods. The direct chemical synthesis of PANI/Pt proceeds through the oxidation of aniline by PtCl62- in the absence of a secondary oxidant. SEM images of these samples indicate that the Pt particles are on the order of .apprx.1 µm for the chemical prepared composite. Electrochem. PANI/Pt synthesis is initiated by the uptake and reduction of PtCl62- into an a priori electrochem. deposited PANI film. This method produces a uniform dispersion of Pt particles with smaller particles with diams. ranging between 200 nm and 1  $\mu m$ . Electrochem. methods may be more suitable for controlling particle dimension. Both materials show reduced proton doping relative to PANI without Pt, indicating the metal particles directly influence proton doping and the oxidation state of the polymer. The electrochem. data indicate that the conductivity in solution is sufficient such that the normal acid doping is attainable for PANI/Pt produced using either synthetic method.

CC 72-2 (Electrochemistry)

Section cross-reference(s): 35, 36

IT UV and visible spectra

(in oxidative polymerization of aniline by PtCl62- or electrochem. uptake and reduction of PtCl62- in **electrodeposited** polyaniline in preparation of polyaniline/platinum composites)

IT Polymer morphology

(of polyaniline/platinum composites)

IT Composites

(oxidative polymerization of aniline by PtCl62- or electrochem. uptake and reduction of PtCl62- in **electrodeposited** polyaniline in preparation of polyaniline/platinum composites)

IT Polyanilines

(oxidative polymerization of aniline by PtCl62- or electrochem. uptake and reduction of PtCl62- in **electrodeposited** polyaniline in preparation of polyaniline/platinum composites)

IT Polymerization

(oxidative; of aniline by PtCl62- or electrochem. uptake and reduction of PtCl62- in **electrodeposited** polyaniline in preparation of polyaniline/platinum composites)

IT 16871-54-8, Hexachloroplatinate(2-)

(oxidative polymerization of aniline by PtCl62- or electrochem. uptake and reduction of PtCl62- in **electrodeposited** polyaniline in preparation of polyaniline/platinum composites)

TT 7440-06-4P, Platinum, preparation 25233-30-1P, Polyaniline (oxidative polymerization of aniline by PtCl62- or electrochem. uptake and reduction of PtCl62- in electrodeposited polyaniline in preparation of polyaniline/platinum composites)

IT 62-53-3, Aniline, reactions

(oxidative polymerization of aniline by PtCl62- or electrochem. uptake and

```
reduction of PtCl62- in electrodeposited polyaniline in
        preparation of polyaniline/platinum composites)
                               THERE ARE 55 CITED REFERENCES AVAILABLE FOR
REFERENCE COUNT:
                         55
                               THIS RECORD. ALL CITATIONS AVAILABLE IN THE
                               RE FORMAT
L72 ANSWER 10 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN
                         2005:1152482 HCAPLUS Full-text
ACCESSION NUMBER:
DOCUMENT NUMBER:
                         144:59755
                         Preparation and cyclic voltammetry studies on
TITLE:
                         nickel-nanoclusters containing polyaniline
                         composites having layer-by-layer structures
AUTHOR(S):
                         Trung, Tran; Trung, Tran Huu; Ha, Chang-Sik
                         Department of Electrochemical Technology and Metal
CORPORATE SOURCE:
                         Protection, Faculty of Chemical Technology, Hanoi
                         University of Technology, Hanoi, 10-000, Vietnam
                         Electrochimica Acta (2005), 51(5), 984-990
SOURCE:
                         CODEN: ELCAAV; ISSN: 0013-4686
                         Elsevier B.V.
PUBLISHER:
DOCUMENT TYPE:
                         Journal
LANGUAGE:
                         English
     Entered STN: 28 Oct 2005
ED
     The authors suggest a novel route for the preparation of organic conductive
AB
     polymer composites that are doped by the programmable controlled dispersion of
     Ni-nanoclusters into a polymer matrix having structure of layer-by-layer.
     layered structures of polyaniline composites containing Ni-nanoclusters (PANI-
     Ni) were prepared electrochem. by a 2-pot process in 0.1M H2SO4 and 0.5M
     NiSO4. The authors discuss on what is intrinsic nature of the mutual
     influences of the PANI chains and Ni-nanoclusters within a PANI-Ni film, on
     the change in structural morphol., and on the broadening and shifts of anodic
     waves to higher potentials during cyclic voltammetry. Also the role of Ni-
     nanoclusters as a source supplying protons to promote the protonation to form
     polaron and bipolaron charge carriers of PANI is suggested.
     72-2 (Electrochemistry)
CC
     Section cross-reference(s): 35, 36, 56, 66
ΤТ
     Composites
        (electrochem. preparation and cyclic voltammetry studies on
        nickel-nanoclusters containing polyaniline composites having
        layer-by-layer structures)
     Clusters
IT
     Nanoparticles
        (nanoclusters; electrodeposition of nickel nanoclusters
        in polyaniline and cyclic voltammetry studies on
        nickel-nanoclusters containing polyaniline composites having
        layer-by-layer structures)
     Electrodeposition
ΤТ
        (of nickel nanoclusters in polyaniline and cyclic voltammetry
        studies on nickel-nanoclusters containing polyaniline composites having
        layer-by-layer structures)
ΙT
     Polymer morphology
        (of polyaniline with nickel nanostructures on ITO electrode
     7440-02-0P, Nickel, processes
ΙT
        (electrodeposition of nickel nanoclusters in polyaniline
        and cyclic voltammetry studies on nickel-nanoclusters containing
        polyaniline composites having layer-by-layer structures)
IT
     50926-11-9, ITO
        (of polyaniline with nickel nanostructures on ITO electrode
                               THERE ARE 18 CITED REFERENCES AVAILABLE FOR
                         18
```

REFERENCE COUNT:

THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L72 ANSWER 11 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2005:1099267 HCAPLUS Full-text

DOCUMENT NUMBER: 143:389765

TITLE: Polysiloxane-polyolefin composite gel

electrolytes and lithium batteries thereof

INVENTOR(S): Miyaqawa, Shinji; Yamaguchi, Shuichiro; Yatabe,

Satoru; Koyama, Noboru

PATENT ASSIGNEE(S): Shirouma Science K. K., Japan; Fuji Heavy

Industries Ltd.; Mitsui and Co., Ltd.

SOURCE: Jpn. Kokai Tokkyo Koho, 17 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005285377	Α	20051013	JP 2004-93640	20040326
PRIORITY APPLN. INFO.:			JP 2004-93640	20040326

ED Entered STN: 13 Oct 2005

The electrolyte comprises (A) a 3-dimensionally crosslinked polymer network matrix in which a nonaq. solvent electrolyte solution is contained and (B) a non-crosslinked polymer containing (B1) terminal-protected ether-modified polysiloxanes and (B2) non-siloxane-type polymers in the polymer network matrix. Lithium batteries with the said electrolytes are also claimed. The electrolytes show easy penetration in porous separators high ion conductivity, and batteries with excellent charge-discharge characteristics are obtained.

IT 25014-41-9D, Polyacrylonitrile, lithium complexes

(semi-interpenetrating polymer networks; polysiloxane-polyolefin semi-interpenetrating polymer networks gel electrolytes and lithium batteries thereof)

RN 25014-41-9 HCAPLUS

CN 2-Propenenitrile, homopolymer (CA INDEX NAME)

CM 1

CRN 107-13-1 CMF C3 H3 N

#### H 2 C === C H - C === N

IC ICM H01M010-40

ICS C08L083-12; C08L101-00; H01B001-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) Section cross-reference(s): 38

opolysiloxane polyolefin composite gel battery electrolyte; lithium battery polysiloxane polyolefin gel electrolyte

IT Battery electrolytes

Polymer electrolytes

(polysiloxane-polyolefin semi-interpenetrating polymer networks gel electrolytes and lithium batteries thereof)

IT Interpenetrating polymer networks

(semi-interpenetrating; polysiloxane-polyolefin semi-interpenetrating polymer networks gel electrolytes and lithium batteries thereof)

TT 7439-93-2D, Lithium, polymer complexes 9011-14-7D, Poly(methyl methacrylate), lithium complexes 24980-62-9D, Acrylonitrile-vinyl acetate copolymer, lithium complexes 25014-41-9D, Polyacrylonitrile, lithium complexes 25322-68-3D, Polyethylene oxide, lithium complexes

(semi-interpenetrating polymer networks; polysiloxane-polyolefin semi-interpenetrating polymer networks gel electrolytes and lithium batteries thereof)

L72 ANSWER 12 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2005:688148 HCAPLUS <u>Full-text</u>

DOCUMENT NUMBER: 144:313283

TITLE: Morphological and electrical properties of the

adhesive for lithium ion battery

AUTHOR(S): Kuan, Hsu-Chiang; Kuan, Chen-Feng; Wu, Chen-Li;

Ma, Chen-Chi M.; Chen, Adler; Pan, Yu-Hao

CORPORATE SOURCE: Department of Chemical Engineering, National Tsing

Hua University, HsinChu, 300, Taiwan

SOURCE: Annual Technical Conference - Society of Plastics

Engineers (2005), 63rd, 1676-1680 CODEN: ACPED4; ISSN: 0272-5223

PUBLISHER: Society of Plastics Engineers
DOCUMENT TYPE: Journal; (computer optical disk)

LANGUAGE: English ED Entered STN: 03 Aug 2005

This research intends to investigate the utilization of porous polymer for Liion secondary battery. The phase separation method was used to control the porous condition. Various solvents were used to generate phase separation when epoxy resin was cured. The void distribution of porous polymer was observed by scanning electron microscope (SEM). Furthermore, the porous adhesive was applied to the Li-ion battery. The effects of adhesive on the capacity and the cycle life of Li-ion battery were investigated. Results showed that the porous epoxy adhesive did not change the electrochem. reaction of electrode. The battery properties, such as the capacity, cycle life and the 1st irrev % are significantly affected by the porous adhesive. The ratio of discharge to charge was over 90% in the coin-cell test. The capacity of battery decreased slightly (about 6.91%(23mAh/g)) as the coating area of adhesive reached 20%(1cm2). The real battery cycle life is more than 85% after 250 times test, which meets with the stds. of the com. grade.

CC 38-3 (Plastics Fabrication and Uses)

Section cross-reference(s): 52

ST epoxy resin adhesive morphol elec cond lithium ion battery

IT Adhesives

Electric conductivity

Polymer morphology

Secondary batteries

(morphol. and elec. properties of epoxy resin adhesive for lithium ion battery)

IT Epoxy resins, uses

(morphol. and elec. properties of epoxy resin adhesive for lithium ion battery)

1T 82077-32-5, 4,4'-Diaminodicyclohexylmethane-bisphenol A diglycidyl ether copolymer

(NPEL-128; morphol. and elec. properties of epoxy resin adhesive for lithium ion battery)

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR

THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L72 ANSWER 13 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2005:525119 HCAPLUS Full-text

DOCUMENT NUMBER: 144:213523

TITLE: Short carbon fiber-reinforced electrically

conductive aromatic polydisulfide/expanded

graphite nanocomposites

AUTHOR(S): Song, L. N.; Xiao, M.; Li, X. H.; Meng, Y. Z. CORPORATE SOURCE: Institute of Energy & Environmental Materials, School of Physics & Engineering, Sun Yat-Sen

School of Physics & Engineering, Sun Yat-Sen University, Guangzhou, 510275, Peop. Rep. China Materials Chemistry and Physics (2005), 93(1),

122-128

SOURCE:

CODEN: MCHPDR; ISSN: 0254-0584

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 17 Jun 2005

Expanded graphite (EG) was prepared by exfoliation of expandable graphite under microwave irradiation Aromatic polydisulfide/EG nanocomposites were fabricated by absorbing cyclic arylene disulfide oligomers into EG pores. The nanocomposite precursor was hot-molded at 200° to carry out simultaneously ring-opening polymerization of the oligomers via a free radical mechanism. The resulting aromatic polydisulfide/EG nanocomposite exhibited an intercalated nanostructure as evidenced by transmission electron microscopy. Short carbon fibers (SCF) were used to further reinforce the aromatic polydisulfide/EG nanocomposites. The ternary polydisulfide/EG/SCF nanocomposites showed superior mech. properties and good elec. conductivity The ternary nanocomposites can be used as elec. conductive materials to prepare bipolar plates of polymer electrolyte membranes in fuel cells.

CC 37-6 (Plastics Manufacture and Processing)

Section cross-reference(s): 52

IT Reinforced plastics

(carbon fiber-reinforced; short carbon fiber-reinforced elec. conductive aromatic polydisulfide-expanded graphite nanocomposites)

IT Polymer morphology

SOURCE:

(surface; short carbon fiber-reinforced elec. conductive aromatic polydisulfide-expanded graphite nanocomposites)

REFERENCE COUNT: 23

THERE ARE 23 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L72 ANSWER 14 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2005:448213 HCAPLUS Full-text

DOCUMENT NUMBER: 143:161777

TITLE: Thin films of endohedral metallofullerenes

embedded in polythiophene: a facile

electrochemical preparation

AUTHOR(S): Fan, Louzhen; Yang, Shangfeng; Yang, Shihe CORPORATE SOURCE: Department of Chemistry, Hong Kong University of

Science and Technology, Kowloon, Hong Kong Thin Solid Films (2005), 483(1-2), 95-101

CODEN: THSFAP; ISSN: 0040-6090

PUBLISHER: Elsevier B.V.

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 27 May 2005

An ew electrochem. route for the synthesis of a hybrid thin film of endohedral metallofullerene (Dy@C82 is used here) and polythiophene is presented, which exploits the unique, compatible redox properties of the couple. The electrochem. response of the resulting Dy@C82/polythiophene film resembles that of Dy@C82 in organic solvents except for the potential peak shifts, but is markedly different from that of a pure metallofullerene solid film. Both the polythiophene backbones and the Dy@C82 moieties appear to retain their individual electrochem. properties in the hybrid film. The film was characterized by UV-visible and FTIR absorption spectroscopy, time-of-flight secondary ion mass spectrometry, and SEM. Probably the Dy@C82 mols. were uniformly dispersed in the polythiophene matrix, forming a compact film. The formation and the electrochem. response of the hybrid film were systematically studied, refining the viable strategy for the encapsulation of metallofullerenes into conducting polymers.

CC 72-2 (Electrochemistry)

Section cross-reference(s): 35, 36, 78

IT Composites

(electrochem. preparation and properties of composite of incorporated Dy@C82 in polythiophene matrix)

IT Polymerization

(electrochem., oxidative; of thiophene in MeCN containing Bu4NPF6 on solution cast Dy@C82 film on ITO or Pt electrodes for Dy@C82-polythiophene composite film)

IT Polymer morphology

UV and visible spectra

(of polythiophene-Dy@C82 composite film)

TT 7440-06-4, Platinum, uses 50926-11-9, Indium tin oxide (electrochem. preparation of thin films of endohedral metallofullerenes embedded in polythiophene by anodic polymerization of thiophene in MeCN containing Bu4NPF6 on solution cast Dy@C82 film on ITO or Pt electrodes)

IT 3109-63-5, Tetrabutylammonium hexafluorophosphate 142979-13-3, Dysprosium fulleride Dy@C82

(electrochem. preparation of thin films of endohedral metallofullerenes embedded in polythiophene by anodic polymerization of thiophene in MeCN containing Bu4NPF6 on solution cast Dy@C82 film on ITO or Pt electrodes)

IT 110-02-1, Thiophene

(electrochem. preparation of thin films of endohedral metallofullerenes embedded in polythiophene by anodic polymerization of thiophene in MeCN containing Bu4NPF6 on solution cast Dy@C82 film on ITO or Pt electrodes)

REFERENCE COUNT:

THERE ARE 25 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L72 ANSWER 15 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2004:1079048 HCAPLUS Full-text

DOCUMENT NUMBER:

142:201397

TITLE:

Nafion-polyfurfuryl alcohol nanocomposite membranes for direct methanol fuel cells

AUTHOR(S):

Liu, Jin; Wang, Huanting; Cheng, Shaoan; Chan,

Kwong-Yu

CORPORATE SOURCE:

Department of Chemistry, University of Hong Kong,

Hong Kong SAR, Peop. Rep. China

SOURCE:

Journal of Membrane Science (2005), 246(1), 95-101

CODEN: JMESDO; ISSN: 0376-7388

PUBLISHER:

Elsevier B.V.

DOCUMENT TYPE: LANGUAGE:

Journal English

ED Entered STN: 17 Dec 2004

Com. Nafion 115 membranes were successfully modified by in situ acid-catalyzed polymerization of furfuryl alc. (PFA) within Nafion structures. FTIR and AFM were used to characterize the chemical and morphol. structures of the Nafion-PFA nanocomposite membrane obtained. The methanol permeation expts. showed that the methanol flux through the Nafion-PFA nanocomposite membranes dropped by a factor of 2.2-2.7 when PFA loading was 3.9-8.0%. Importantly, the proton conductivity of the membranes decreased only slightly at a low PFA loading (<8%). The nanocomposite membranes with higher selectivity (e.g., proton conductivity/methanol crossover) achieved a much higher DMFC performance at both room temperature and 60 °C.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 36, 38, 76

IT Interpenetrating polymer networks

Membrane electrodes

Polymer morphology

(Nafion-polyfurfuryl alc. nanocomposite membranes for direct methanol fuel cells)

IT Nanocomposites

(membranes; Nafion-polyfurfuryl alc. nanocomposite membranes for direct methanol fuel cells)

IT 9002-84-0, PTFE 9003-55-8, Styrene-butadiene copolymer 9004-32-4, Carboxymethyl cellulose, sodium salt

(electrode binder; Nafion-polyfurfuryl alc. nanocomposite membranes for direct methanol fuel cells)

REFERENCE COUNT: 24 THERE ARE 24 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L72 ANSWER 16 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2004:974239 HCAPLUS Full-text

DOCUMENT NUMBER: 142:121993

TITLE: Chemical and Electrochemical Synthesis of

Polyaniline/Gold Composites

AUTHOR(S): Kinyanjui, John M.; Hanks, Justin; Hatchett, David

W.; Smith, Anthony; Josowicz, Mira

CORPORATE SOURCE: Department of Chemistry, University of Nevada, Las

Vegas, NV, 89154-4003, USA

SOURCE: Journal of the Electrochemical Society (2004),

151(12), D113-D120

CODEN: JESOAN; ISSN: 0013-4651

PUBLISHER: Electrochemical Society

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 16 Nov 2004

The in situ synthesis of micrometer and nanometer Au particles in polyaniline (PANI/Au composite) using chemical or electrochem. methods, was compared. The direct chemical synthesis of PANI/Au is initiated via the spontaneous oxidation of aniline by AuCl4-. Au colloid formation and subsequent reaction with PANI is monitored by in situ UV/visible spectroscopy. The emergent polymer nucleates on the Au as the PANI chain length increases, encapsulates the metal, and ppts. as its solubility limit is exceeded. SEM images of these samples show relatively constant 1 µm diameter Au particles. Electrochem. PANI/Au synthesis is initiated by AuCl4- reduction into an a priori electrochem. deposited PANI film. This method also produces a nearly uniform dispersion of Au particles but with significantly smaller 150-300 nm particles. Electrochem. methods are more suitable for controlling particle dimensions. A minimal decrease in conductance is observed for the chemical formed PANI/Au when compared to PANI samples without the Au. A significant

decrease in conductance is observed for the electrochem. formed composite. The large decrease in conductance is related to the decrease in proton doping and a greater number of oxidized units in the polymer upon electrochem. uptake and reduction of AuCl4-.

CC 72-2 (Electrochemistry)

Section cross-reference(s): 35, 36, 56

IT Electrodeposits

(composite; polyaniline/gold)

IT Electrodeposition

(of gold in electrochem. polymerization of aniline in solution containing  ${\tt AuCl4-}$ 

in preparation of polyaniline/gold composites)

IT Polymer morphology

(of polyaniline/gold composites)

IT Composites

(polyaniline/gold)

REFERENCE COUNT: 59 THERE ARE 59 CITED REFERENCES AVAILABLE FOR

THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L72 ANSWER 17 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2004:964187 HCAPLUS Full-text

DOCUMENT NUMBER: 142:159452

TITLE: UV curing multi-component polymer blend

electrolyte, lithium secondary battery,

and preparation method thereof

INVENTOR(S): Cho, Byeong Won; Cho, Won Il; Kim, Hyeong Seon;

Kim, Un Seok; Kim, Yong Tae; Lee, Hui U.; Song,

Min Gyu

PATENT ASSIGNEE(S): Korea Institute of Science and Technology, S.

Kore

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given

CODEN: KRXXA7

DOCUMENT TYPE: Patent LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 2003005256 PRIORITY APPLN. INFO.:	A	20030117	KR 2002-713109 KR 2002-713109	20020930 20020930

ED Entered STN: 12 Nov 2004

An UV-curing multi-component polymer blend electrolyte, a lithium secondary AB battery containing the electrolyte and their preparation methods are provided, to improve the adhesive strength, the mech. properties, the low and high temperature characteristic, the high rate discharge capacity, the lifetime, the capacity and the stability of a battery. The UV-curing multi-component polymer blend electrolyte comprises a function-I polymer; a function-II polymer; a function-III polymer; an organic electrolyte solution which is prepared by dissolving a lithium salt into an organic solvent; and optionally at least one selected from the group consisting of a plasticizer, a porous filler, a UV curing initiator and a curing accelerator. The function-I polymer is obtained by UV curing the ethylene glycol di(meth)acrylate oligomer CH2 = CR1COO(CH2CH2O)nCOCR2 = CH2, wherein R1 and R2 are independent each other and are H or Me group and n is an integer of 3-20; the function-II polymer is selected from the group consisting of polyacrylonitrile, poly(Me methacrylate) and their mixture; and the function-III polymer is selected from the group consisting of polyvinylidene fluoride, poly(vinyl chloride) and their mixture

Preferably the lithium salt is selected from the group consisting of LiPF6, LiClO4, LiAsF6, LiBF4, LiCF3SO3, Li(CF3SO2)2N and their mixts.; and the organic solvent is selected from the group consisting of ethylene carbonate, propylene carbonate, di-Et carbonate, di-Me carbonate, ethylmethyl carbonate and their mixts.

- IC ICM H01M010-40
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 35

- ST polymer electrolyte lithium secondary **batter** photopolymn interpenetrating network blend
- IT Adhesion, physical

#### Composites

#### Interpenetrating polymer networks

Plasticizers

Polymer electrolytes

(UV curing multi-component polymer blend electrolyte lithium secondary battery and preparation method thereof)

IT Acrylic polymers, uses

(UV curing multi-component polymer blend electrolyte lithium secondary battery and preparation method thereof)

IT Polymerization catalysts

(accelerators; UV curing multi-component polymer blend electrolyte lithium secondary battery and preparation method thereof)

IT Electric capacitance

(discharge capacity, improved; UV curing multi-component polymer blend electrolyte lithium secondary **battery** and preparation method thereof)

IT Secondary batteries

(lithium; UV curing multi-component polymer blend electrolyte lithium secondary battery and preparation method thereof)

IT Strength

(of polymer electrolyte; UV curing multi-component polymer blend electrolyte lithium secondary **battery** and preparation method thereof)

IT Crosslinking

Crosslinking catalysts

(photochem.; UV curing multi-component polymer blend electrolyte lithium secondary battery and preparation method thereof)

IT Fillers

(porous; UV curing multi-component polymer blend electrolyte lithium secondary battery and preparation method thereof)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl carbonate 7791-03-9, uses 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluoroPhosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide

(UV curing multi-component polymer blend electrolyte lithium secondary battery and preparation method thereof)

IT 26570-48-9DP, Poly(ethylene glycol) diacrylate, homopolymers and methacrylate derivative copolymers

(UV curing multi-component polymer blend electrolyte lithium secondary **battery** and preparation method thereof)

IT 26570-48-9, Poly(ethylene glycol) diacrylate

(UV curing multi-component polymer blend electrolyte lithium secondary **battery** and preparation method thereof)

IT 9002-86-2

(blends with acrylic polymers; UV curing multi-component polymer blend electrolyte lithium secondary **battery** and preparation method thereof)

IT 25014-41-9

(polymer blends with vinyl and acrylic polymers; UV curing multi-component polymer blend electrolyte lithium secondary battery and preparation method thereof)

IT 9011-14-7, Poly(methyl methacrylate)

(polymer blends with vinyl and acrylic polymers; UV curing multi-component polymer blend electrolyte lithium secondary battery and preparation method thereof)

L72 ANSWER 18 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER:

2004:520121 HCAPLUS Full-text

DOCUMENT NUMBER:

141:207824

TITLE:

A novel approach to prepare poly(3,4-

ethylenedioxythiophene) nanoribbons between V2O5

layers by microwave irradiation

AUTHOR(S):

Murugan, A. Vadivel; Kwon, C. W.; Campet, G.; Kale, B. B.; Mandale, A. B.; Sainker, S. R.; Gopinath, Chinnakonda S.; Vijayamohanan, K.

CORPORATE SOURCE:

Centre for Materials for Electronics Technology

(C-MET), Department of Information Technology,

Government of India, Pune, 411008, India

SOURCE:

Journal of Physical Chemistry B (2004), 108(30),

10736-10742

CODEN: JPCBFK; ISSN: 1520-6106

PUBLISHER: American Chemical Society

DOCUMENT TYPE: LANGUAGE: Journal English

ED Entered STN: 29 Jun 2004

Rapid synthesis of poly(3,4-ethylenedioxythiophene) (PEDOT) nanoribbons AB interleaved between the layers of crystalline V2O5 is achieved for the first time under microwave irradiation via the redox intercalative polymerization reaction of 3,4-ethylenedioxythiophene (EDOT) monomer and crystalline V2O5 at different time intervals. Compared with the conventional 12 h of refluxing for intercalative polymerization, the microwave-assisted redox polymerization process proceeds rapidly, enabling the expansion of the interlayer spacing of crystalline V2O5 from 0.43 to 1.41 nm within 8 min. The characterization of this material using powder XRD, XPS, EPR, SEM, and HRTEM anal. supports the intercalation of the polymer between V2O5 layers, leading to enhanced bidimensionality. XPS anal. clearly shows the presence of mixed-valent V4+/V5+ in the V2O5 framework after the redox intercalative polymerization, which also confirms charge transfer from the polymer to the V2O5 framework. EPR study also reveals redox processes during EDOT insertion and polymerization between the V2O5 layers. After PEDOT insertion into V2O5, the EPR signal from VO2+ is more pronounced as the intensity of the signal increases as compared to that of pristine V2O5. This nanocomposite when coupled with a large-area Li foil electrode in 1 M LiClO4 in a mixture of ethylene and di-Me carbonate (1:1 by volume) gives a discharge capacity of .apprx.350 mA h g-1, which is significantly higher than that of pristine V2O5.

CC 37-3 (Plastics Manufacture and Processing)

Section cross-reference(s): 72, 76

IT Polymer morphology

(lamellar; poly(3,4-ethylenedioxythiophene) nanoribbons preparation between V2O5 layers)

IT Conducting polymers Cyclic voltammetry

Electric conductivity

Electric potential

Hybrid organic-inorganic materials

Nanocomposites

(poly(3,4-ethylenedioxythiophene) nanoribbons preparation between V2O5 lavers)

IT 7439-93-2, Lithium, uses

(electrode; poly(3,4-ethylenedioxythiophene) nanoribbons

preparation between V2O5 layers)

REFERENCE COUNT:

THERE ARE 41 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L72 ANSWER 19 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN ACCESSION NUMBER: 2004:262980 HCAPLUS Full-text

DOCUMENT NUMBER:

140:407721

TITLE:

Vanadium oxide nanofibers and vanadium oxide

polyaniline nanocomposite: preparation,

characterization and electrochemical behavior

AUTHOR(S):

Lutta, Samuel T.; Dong, Hong; Zavalij, Peter Y.;

Whittingham, M. Stanley

CORPORATE SOURCE:

Chemistry Department and the Institute for

Materials Research, State University of New York at Binghamton, Binghamton, NY, 13902-6016, USA Materials Research Society Symposium Proceedings

(2003), 788 (Continuous Nanophase and Nanostructured Materials), 321-326 CODEN: MRSPDH; ISSN: 0272-9172

PUBLISHER:

SOURCE:

Materials Research Society

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 31 Mar 2004

The sol gel reaction of NH4VO3 and polymethylmethacrylate (PMMA) template followed by hydrothermal treatment formed (NH4)xV2O5- $\delta$ .nH2O rods. TGA, SEM, XRD and FTIR characterized this compound Heating (NH4)xV2O5- $\delta$ .nH2O in oxygen and nitrogen at 250° and 300° resp. resulted in the formation of vanadium oxides nanofibers of V3O7 and V2O5. Performance of these compds. as **cathode** in rechargeable lithium **battery** was investigated in a LiPF6/mixed carbonate electrolyte. The materials show good cycling with capacity greater than 130 mAh/g, which translates to the insertion of 0.5 mol of Li+ per vanadium of the active material.

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 40, 42, 52

ST vanadium oxide polyaniline nanofiber nanocomposite rechargeable lithium battery cathode

IT Secondary batteries

(lithium; vanadium oxide nanofibers and vanadium oxide polyaniline nanocomposite as cathode of rechargeable lithium

battery)

IT Nanocomposites

Nanofibers

Polymer morphology

(preparation and characterization of vanadium oxide nanofibers and vanadium oxide polyaniline nanocomposite)

IT Battery cathodes

(rechargeable lithium; application of vanadium oxide nanofibers and vanadium oxide polyaniline nanocomposite)

REFERENCE COUNT:

THERE ARE 18 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE

RE FORMAT

L72 ANSWER 20 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN

18

2004:210612 HCAPLUS Full-text ACCESSION NUMBER: 141:9523 DOCUMENT NUMBER: Gelified Co-continuous Polymer Blend System as TITLE: Polymer Electrolyte for Li Batteries Passerini, S.; Lisi, M.; Momma, T.; Ito, H.; AUTHOR(S): Shimizu, T.; Osaka, T. CORPORATE SOURCE: ENEA, Rome, 00060, Italy Journal of the Electrochemical Society (2004), SOURCE: 151(4), A578-A582 CODEN: JESOAN; ISSN: 0013-4651 Electrochemical Society PUBLISHER: DOCUMENT TYPE: Journal English LANGUAGE: Entered STN: 17 Mar 2004 ED The co-continuous polymer blend was synthesized for use as the electrolyte in AB lithium batteries. Such electrolytes were characterized by a co-continuous morphol. consisting of two three-dimensionally interpenetrating polymer networks simply formed by hot-mixing two non-miscible polymers. A preliminary electrochem. characterization of the gelled co-continuous polymer blend as electrolyte for lithium batteries is also reported. IT 9002-84-0, Teflon (blend with Teflon, cathode; gelled co-continuous polymer blend system as polymer electrolyte for Li secondary batteries) RN 9002-84-0 HCAPLUS Ethene, 1,1,2,2-tetrafluoro-, homopolymer (CA INDEX NAME) CN CM 1 CRN 116-14-3 CMF C2 F4 52-2 (Electrochemical, Radiational, and Thermal Energy Technology) CC Section cross-reference(s): 38, 76 Battery electrolytes ΙT Gels (gelled co-continuous polymer blend system as polymer electrolyte for Li secondary batteries) Polymer morphology IT (interpenetrating network, phase; gelled co-continuous polymer blend system as polymer electrolyte for Li secondary batteries) 9002-84-0, Teflon IT(blend with Teflon, cathode; gelled co-continuous polymer blend system as polymer electrolyte for Li secondary batteries) 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate IT (gel composites with carbonates/lithium salts/; gelled co-continuous polymer blend system as polymer electrolyte for Li secondary batteries) THERE ARE 11 CITED REFERENCES AVAILABLE FOR REFERENCE COUNT: 11 THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT L72 ANSWER 21 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN

2004:207992 HCAPLUS Full-text

ACCESSION NUMBER:

DOCUMENT NUMBER: 140:397301

TITLE: Photoregulation of Mass Transport through a

Photoresponsive Azobenzene-Modified Nanoporous

Membrane

AUTHOR(S): Liu, Nanguo; Dunphy, Darren R.; Atanassov, Plamen;

Bunge, Scott D.; Chen, Zhu; Lopez, Gabriel P.;

Boyle, Timothy J.; Brinker, C. Jeffrey

CORPORATE SOURCE: Chemical and Nuclear Engineering Department and

Center for Micro-Engineered Materials, University

of New Mexico, Albuquerque, NM, 87131, USA

Nano Letters (2004), 4(4), 551-554

CODEN: NALEFD; ISSN: 1530-6984

PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal LANGUAGE: English ED Entered STN: 16 Mar 2004

AB Photoresponsive nanoporous membranes, composed of monosized pores modified with azobenzene ligands, were prepared on an ITO working electrode using an evaporation-induced self-assembly procedure. They exhibited the size-selective photoregulated mass transport of two ferrocene-based mol. probes through the membrane to the electrode surface as determined using a chronoamperometry technique. The measured oxidative current increased and decreased in response to alternating UV and visible light exposure correlating strongly with the photoisomerization state of the azobenzene ligands. This indicates that the optically switchable conformation (trans or cis) of azobenzene ligands controls the effective pore size and, correspondingly, transport behavior on the nanoscale.

CC 74-1 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 72

IT Isomerization

SOURCE:

(cis-trans, photochem.; photocontrolled transport of ferrocene derivs. to **electrode** surface through photoresponsive nanoporous membrane prepared by evaporation-induced self-assembly of azobenzenesilane and silicate)

IT Polysiloxanes, properties

(membrane; photocontrolled transport of ferrocene derivs. to **electrode** surface through photoresponsive nanoporous membrane prepared by evaporation-induced self-assembly of azobenzenesilane and silicate)

IT Polymer morphology

(mesophase; transport of ferrocene derivs. to **electrode** via photoresponsive nanoporous membrane prepared by evaporation-induced self-assembly of azobenzenesilane and silicate in relation to)

IT Chronoamperometry

Electrochemical cells

Electrochemistry

Mass transfer

Nanocomposites

Pore size

Self-assembly

(photocontrolled transport of ferrocene derivs. to **electrode** surface through photoresponsive nanoporous membrane prepared by evaporation-induced self-assembly of azobenzenesilane and silicate)

IT 50926-11-9, ITO

(electrode; photocontrolled transport of ferrocene derivs. to electrode surface through photoresponsive nanoporous membrane prepared by evaporation-induced self-assembly of azobenzenesilane and silicate)

IT 685892-36-8, Tetraethyl silicate-4-(3-Triethoxysilylpropylureido)azobe nzene copolymer (membrane; photocontrolled transport of ferrocene derivs. to electrode surface through photoresponsive nanoporous membrane prepared by evaporation-induced self-assembly of azobenzenesilane and silicate) IT 1291-48-1 377776-55-1 (mol. probe; photocontrolled transport of ferrocene derivs. to electrode surface through photoresponsive nanoporous membrane prepared by evaporation-induced self-assembly of azobenzenesilane and silicate) ΙT 685895-75-4 (photocontrolled transport of ferrocene derivs. to electrode surface through photoresponsive nanoporous membrane prepared by evaporation-induced self-assembly of azobenzenesilane and silicate) IT 78-10-4, Tetraethyl silicate 529496-77-3 (photoresponsive nanoporous membrane on ITO electrode prepared by evaporation-induced self-assembly of azobenzenesilane and silicate for photoregulated mass transport of ferrocenes) THERE ARE 27 CITED REFERENCES AVAILABLE FOR REFERENCE COUNT: 27 THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT L72 ANSWER 22 OF 22 HCAPLUS COPYRIGHT 2007 ACS on STN 2004:98731 HCAPLUS Full-text ACCESSION NUMBER: 140:322444 DOCUMENT NUMBER: TITLE: Characterization of nanostructured organic-inorganic hybrid membranes Song, Min-Kyu; Hwang, Ji-Seok; Kim, Young-Taek; AUTHOR(S): Rhee, Hee-Woo; Kim, Jinhwan Department of Chemical Engineering, Sogang CORPORATE SOURCE: University, Seoul, 121-742, S. Korea Molecular Crystals and Liquid Crystals (2003), SOURCE: 407, 421-428 CODEN: MCLCD8; ISSN: 1542-1406 PUBLISHER: Taylor & Francis, Inc. DOCUMENT TYPE: Journal English LANGUAGE: Entered STN: 06 Feb 2004 We prepared structurally stable organic-inorg. hybrid ionomer membrane in AB which nano-sized solid proton conductors were uniformly dispersed in an ion exchange polymer matrix. Nafion membrane was in-situ doped with zirconium hydrogen phosphate (ZHP) after phase-separated hydrophobic porogen, di-Bu phthalate, was leached out from Nafion membrane by di-Et ether and methanol co-solvent. FE-SEMicrographs showed that nanoporous structure in Nafion membrane was well developed by the solvent extraction process, and the pores were completely filled with in-situ doped ZHP particles. It was confirmed by FTIR study that hydrophilic ZHP fillers improved water retention of composite ionomer membrane at high temperature regions above 100°C. Consequently, the high temperature conductivity of Nafion/ZHP membranes was much higher than that of neat Nafion membrane. 38-3 (Plastics Fabrication and Uses) CC Section cross-reference(s): 52, 76 IT Cation exchangers Fuel cell separators Membranes, nonbiological Nanocomposites Polymer morphology

(characterization of nanostructured organic-inorg. Nafion hybrid

membranes)

12

IT Pore

(nanopore; characterization of nanostructured organic-inorg. Nafion hybrid membranes)

REFERENCE COUNT:

THERE ARE 12 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

#### => d his nofile

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SEL RN

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